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CONTENTS.

	PAGE
Relation of Tonsillar and Nasopharyngeal Infections to General Systemic Disorders. (Illustrated.) By S. J. Crowe, S. Shelton Watkins, and Alma S. Rothholz.	1
A Legend of Salerno. How Constantine the African Brought the Art of Medicine to the Christians. (Illustrated.) By Charles Singer.	64
Notes and News	69

RELATION OF TONSILLAR AND NASOPHARYNGEAL INFECTIONS TO GENERAL SYSTEMIC DISORDERS.[1]

By S. J. Crowe, S. Shelton Watkins and Alma S. Rothholz.

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In order to determine the relation of tonsillar and nasopharyngeal infections to various general disorders, we have followed up and examined, subsequent to their discharge from the hospital, as many as possible of the patients from each of the following groups:

I. Arthritic group:

1. Removal of tonsils as a therapeutic measure for infectious arthritis.

2. Removal of tonsils as a therapeutic measure for rheumatoid arthritis.

3. Removal of tonsils as a therapeutic measure for myalgia or myositis.

4. Removal of tonsils as a therapeutic measure for acute rheumatic fever.

II. Removal of tonsils as a therapeutic measure for chorea.

III. Removal of tonsils as a therapeutic measure for nephritis.

IV. Removal of tonsils as a therapeutic measure for hyperplasia of the cervical glands.

In addition to the tabulation and discussion of the material in these seven groups, we also include a general discussion of each of the following subjects:

A. The clinical anatomy of the nose, throat and lymphatic system in the neck.

B. Focal infection with reference particularly to the tonsils and nasopharynx.

C. The portals of entry of tubercle bacilli, and a report on forty-six cases of an "apparently primary" tuberculosis of the tonsils or adenoids found in our series.

D. The indications and contra-indications for tonsillectomy.

E. The operation and the post-operative complications of tonsillectomy.

These discussions are included particularly for the benefit of the students in the third and fourth years of the medical school.

Introduction.—The reorganization of the Nose, Throat and Ear Department of The Johns Hopkins Hospital in 1911, on what was practically a full-time basis, rendered it possible to make more careful general physical examinations of the patients in this department before operation; to carry out the operative procedures under the best conditions for both the patient and the operator; to make routine histological examinations of the tissues removed at operation; and to establish a system for following up the more interesting cases after their discharge from the hospital.

Every operative case, with the exception of the simple adenoidectomies, is admitted to the surgical wards of the hospital. A routine physical examination is made before the operation, and the patients are not discharged until all danger of post-operative complications is past.

The greatest benefit derived from this arrangement, however, is the spirit of co-operation between the laryngological and other departments. Previous to 1911, practically all operations on tonsils, sinuses, and even mastoids were done in the out-patient department, with the aid of inexperienced anæsthetists and assistants; and, as a rule, the patients were sent to their homes a few hours later. Under these conditions, but few of the interesting cases with cardiac, renal or arthritic symptoms secondary to a focal infection in the tonsils or sinuses were referred by the other departments. Since 1911, however, we have had an opportunity to operate on and subsequently follow up a large number of cases with some general systemic disorder, supposed to be secondary to a chronic focus of infection in the upper air passages.

[1] Based on the study of 1000 cases operated on at The Johns Hopkins Hospital during the past five years.

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This report is based on the study of 1000 tonsillectomies. A histological examination of the tonsils and adenoids removed at operation was made in every case. *We include in the tables and in the text, only those patients concerning whom we have some definite information as to what benefit, if any, resulted from the removal of their tonsils.* The post-operative data were obtained partly through the courtesy of the family physician; partly by letters from the patients themselves; but chiefly by personal examinations of the patients brought back by a special social service nurse[2] from one to four years after their discharge from the hospital. It is our intention to re-examine each year the patients included in the following tables, and to report again on their condition after five years. It will be particularly interesting to see how often there is a recurrence of chorea, rheumatic fever, arthritis, and renal symptoms in these patients who now have their upper air-passages in good condition. It will also be of interest to determine the ultimate result in the forty-six patients who had an "apparently primary" tuberculous lesion in either the tonsils or adenoids.

On account of the large number of nose, throat and ear cases treated in the out-patient department and in the hospital, and our small staff of assistants, the records in many instances are not so complete as we would wish. This is particularly true of the group of tuberculous tonsils or adenoids. In the great majority of cases in this group, a tuberculous lesion was not suspected at the time of the operation, but was only discovered by the routine histological examination of the tissue removed at operation.

It is a difficult matter to obtain post-operative notes and examinations on these patients. Many of the patients admitted from the out-patient department deliberately give false addresses, and many others are foreigners or negroes who frequently change their place of residence.

Although the records are incomplete in some essential details, we believe they are interesting enough to publish in full, since they tend to support the evidence of Billings and others in regard to the importance of focal infections in many of the general disorders seen by the internist, the pediatrician and the general surgeon.

A. Clinical Anatomy of the Nose, Throat and the Lymphatic System in the Neck.

For purposes of description, the pharynx is divided into three portions: The nasopharynx, the oropharynx and the laryngopharynx.

The Nasopharynx.—The nasopharynx with its local collection of lymphoid tissue, variously spoken of as the pharyngeal tonsil, third tonsil, Luschka's tonsil, adenoids, post-nasal growths, etc., is of importance from many points of view. Not infrequently maladies of children are referable either directly or indirectly to the abnormalities or infections of the nasopharynx.

Obstruction in this locality results in mouth-breathing with its familiar indirect effects. The most common results are stasis of nasal secretions with excoriation of the skin around the external nares; frequently an accessory nasal sinus infection; changes in the facial expression: retardation of mental and physical development; defective speech; affections of the ear, both suppurative and catarrhal;[3] also numerous symptoms, usually described as "reflex neuroses." Among these, night terrors, asthma, petit-mal-like attacks, paroxysmal nocturnal attacks of coughing, and enuresis nocturna are the most common. A further possible result of enlarged adenoids is an interference with the development of the superior maxillary bones which results in a high, narrow V-shaped deformity of the hard palate.

The anatomical landmarks of the nasopharynx as seen in the post-nasal mirror are: (1) the orifices of the nasal passages in which can be seen the posterior ends of the turbinates or conchæ; (2) the pharyngeal orifices of the Eustachian tubes; (3) the fossa of Rosenmueller just behind the Eustachian orifice on each side; (4) the mound of lymphoid tissue (adenoids) on the vault, most prominent in the median line, but often extending laterally or hanging down sufficiently to obstruct the posterior nasal orifices and the openings of the Eustachian tubes.

The anterior lobe of the hypophysis cerebri is developed from an infolding of the mucous membrane of the vault of the nasopharynx, known as the pouch of Rathke. In young animals and children, "rests" of anterior lobe cells may be found along the embryological pathway from the nasopharynx to the sella turcica.[4] In some respects, this pathway in adult life is similar to the thyro-glossal duct.

The nasopharynx has a rich blood supply. The pharyngeal branches of the vidian and pterygo-palatine arteries anastomose with the ascending pharyngeal. The veins empty into the pterygoid plexus.

Spontaneous bleeding from the nasopharynx in children is not an infrequent symptom of enlarged adenoids. The blood may come from one or both nostrils, from the mouth, or may be swallowed. When it is reported that blood is found on a child's pillow, it is probably a symptom of adenoids.

Other common sources of bleeding in the nose and throat are:

1. Superficial, non-specific ulceration on the anterior third of the septum, perhaps the most common.

2. Ulceration in the posterior nares or nasopharynx, secondary to a coryza or nasopharyngitis. Bleeding from this source may become quite serious in adults unless properly treated.[5]

[2] In justice to the regular Social Service Department of the hospital, it should be mentioned that they do not spend their time in looking up or bringing back for examination tonsils cases that have been operated on several years previously. This work is done by a nurse employed by us for this particular purpose.

[3] It has been estimated that eighty per cent of the deaf adults in the United States owe the origin of their trouble to neglected nasopharyngeal disorders in childhood.

[4] Haberfeld: Die Rachendachhypophyse, etc., Beitr. z. path. Anat. u. z. allg. Path., 1910, XLVI, 133-232.

[5] Spontaneous bleeding from the posterior nares or nasopharynx, aside from a new growth or leukæmia, is usually the result of an infection. In treating patients with a severe bleeding from this locality, it is of the greatest importance to bear in mind the local conditions that cause the hemorrhage. The mucous membrane

3. Spongy gums associated with pyorrhea alveolaris in adults, and the granulations in carious molar teeth in children.

4. Enlarged veins around the base of the tongue, said to be a particularly common source of bleeding in gouty persons.

5. Nasal diphtheria; various blood diseases; vicarious menstruation; new growths and œsophageal varices.

6. Foreign bodies should always be suspected when there is a long continued oozing of blood from the nose or throat in young children. Within the past year, an infant seven months of age, was admitted to the Pediatric clinic of The Johns Hopkins Hospital with a history of frequent vomiting of bright red blood, and tarry stools for two weeks. Hemoglobin was 45 per cent, but, otherwise, the child was in excellent condition. Although the parents very much resented the suggestion that the child might have swallowed a foreign body, an X-ray plate was made and an open safety-pin, point up, was found in the upper third of the œsophagus. After removal, all bleeding ceased and the child made an uninterrupted recovery.

7. When there is blood-tinged expectoration in adults and children over twelve years of age, pulmonary tuberculosis should be suspected, and a thorough examination of the lungs and sputum should be made.

There is a close mesh of lymph vessels in the vault of the nasopharynx. They drain either into the the retropharyngeal glands or into the posterior or external group of the deep lateral chains in the neck.

Retropharyngeal abscesses, so common in young children, are probably due to a suppurative adenitis secondary to nasopharyngeal infection. The retropharyngeal glands of Henle are situated on each side of the median line between the mucous membrane of the pharynx and the aponeurosis over the bodies of the second and third cervical vertebræ. These glands receive the lymphatics of the pharynx, nasopharynx, nose, Eustachian tubes and middle ear. They undergo atrophic changes between the third and fifth years.

Primary tuberculosis of the adenoids is not infrequent. Routine histological examination of the tonsils and adenoids from 1000 cases operated on at The Johns Hopkins Hospital revealed 14 cases with an "apparently primary" tuberculosis of the adenoids. These cases are given in detail in the table of tuberculous tonsils and adenoids. We have repeatedly noted that *bilateral* tuberculous cervical adenitis is associated with a tuberculous lesion in the adenoids alone. On the other hand, *unilateral* tuberculous involvement of the cervical glands is frequently associated with a tuberculous process in the tonsil on the affected side, the other tonsil and the adenoids being free from any microscopical tuberculous lesion.

It is difficult to determine at what stage an amount of adenoid tissue ceases to be physiological. We do not advise the removal of adenoids or tonsils in all children, solely because of their size. In this clinic, the practice is to regard the tonsils and adenoids as physiologically important parts of the mechanism that protects the lower air passages from dust and organisms. This will be more fully discussed in connection with the indications for tonsillectomy. If there is no mouth-breathing; no evidence of damage to the ears; no chronic enlargement of the glands of the neck; no cystic condition of the adenoids known as Thornwaldt's disease; and none of the so-called "reflex neuroses," we do not recommend the removal of adenoids regardless of their size or appearance.

There is normally a hyperplasia of the tonsils and adenoids between the ages of three and twelve years. The Hebrew race is especially predisposed to this hyperplasia. Climate is also a predisposing factor. Osler is of the opinion that there are more mouth-breathers to the acre in England than in any other country, while Massei in Naples reports that he has seen only five cases during the past fifteen years in which an adenoidectomy was indicated. In Baltimore, about 25 per cent of the children visiting the various out-patient departments have some definite indication for removal of their adenoids, the most common being frequent attacks of otitis media.

The Oropharynx.—The oropharynx is that portion of the pharynx lying between the free edge of the soft palate and the upper border of the epiglottis. It contains the tonsils and a variable amount of lymphatic tissue in the mucous membrane of the lateral and posterior walls.

As to the function of the tonsils, adenoids and other lymphatic tissue in the throat, we assume that it is a part of the mechanism for the protection of the lower air passages against infection.

There are three protective agencies in the upper air passages:

1. The mucus secreted by the mucous membrane of the nose, pharynx and trachea.

2. The ciliated epithelium of the nasal and tracheal mucous membrane.

3. Waldeyer's ring of lymphoid tissue in the throat, together with the lymphatic glands of the neck.

The mucus is an important factor in protecting the lower air passages from bacteria and dust. Under normal conditions of life in large cities, from 15,000 to 20,000 bacteria enter the nose during an hour's quiet respiration. With normal anatomical and physiological nasal conditions, but few of these organisms ever reach the nasopharynx in a viable condition. This is due partly to the relatively large amount of mucus secreted by the nasal mucous membrane—over a liter in

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and surrounding lymphoid tissue are infected, and, as a rule, there is a long-standing infection of one of the accessory nasal sinuses. It is against all the principles of surgery to pack this infected area and to leave the packs in place for a week or longer, as is usually recommended in text-books.

The bleeding begins as a result of an ulceration of the mucous membrane and the erosion of an artery or vein. Packing such an infected area without frequent removal and cleansing, only encourages an extension of the ulceration, and makes it more difficult to control the bleeding. The packing employed should be of sterile gauze and as small and compact as possible. If the nasopharynx is packed, the packing should be removed at least once every forty-eight hours, and the nose and mouth thoroughly washed with a sterile salt or alkaline solution. This should be done even though the bleeding starts again when the packs are removed. The pressure alone of a nasopharyngeal pack, held in place by tape coming through the anterior nares, will cause ulceration. The mouth and anterior nares must be kept as clean as possible by washes and irrigation with some sterile, non-irritating fluid.

24 hours[6]—and partly to the fact that this mucus is inhibitory if not actually bactericidal.[7]

Interference with the function of the ciliated epithelium of the trachea is well illustrated by the distress in whooping cough.[8] Highly specialized epithelium is equally important in the nose. When destroyed by caustics, operative procedures or disease, the ciliated cells are replaced by squamous cells, and the efficiency of the nose as a protective organ is impaired.

The tonsil is probably the principal portal of entry for the infections following contamination of the mouth with soiled hands or toys, infected food, milk or water. Wood[9] has found that the tonsils in the hog are more readily infected by the anthrax bacillus than is any other portion of the buccal or pharyngeal mucous membrane. From his experiments he concludes that the anthrax bacillus passes through the epithelium lining the crypts and not the surface mucosa; and that the organisms gain entrance to the parenchyma of the tonsil by passing through living, unaltered epithelium.

There is both experimental and clinical evidence, however, that organisms can pass through the intact mucous membrane[10] and lymphoid tissue of the pharynx. Clinically, we have frequently seen arthritic symptoms reappear and the cervical glands become enlarged and tender as the result of a simple pharyngitis in patients whose tonsils and adenoids had been thoroughly removed.

That organisms may pass through intact mucous membrane and leave no evidence of local injury, has been best worked out for the tubercle bacillus.[11] Living bacilli may be recovered from the lymph stream within a few minutes after the introduction of a suspension of tubercle bacilli into the gastro-intestinal tract of a normal animal, either by stomach-tube or by rectal injection.

Harbitz,[12] in 1905, made a careful study of the glandular system in a large number of clinically tuberculous and non-tuberculous persons coming to autopsy. His object was to determine as far as possible the primary portal of entry in those with tuberculous lesions of the lungs, glands, bones and meninges. In many instances, he demonstrated by animal inoculation and by cultural methods, tubercle bacilli in tonsils, adenoids and cervical glands that grossly and microscopically showed no tuberculous lesion. In general, these results have been confirmed by other observers, and it is probable that tubercle bacilli may not only pass through normal mucous membrane without causing any local lesion, but may remain latent in histologically normal lymph glands for months or years.

The tonsils are composed of lymphatic cells with follicles or germinal centers as in an ordinary lymph gland. They differ from lymph glands in that they have only efferent lymph channels, and no medullary sinuses. The invaginations of the surface epithelium form deep crypts known as fossulæ. These crypts are the most important anatomical characteristic of the tonsils. They develop from an ingrowth of squamous epithelium, their lumina being formed by the desquamation of a central core. The cells lining the crypts have no sub-epithelial layer of connective tissue. The crypts extend, as a rule, through the entire thickness of the tonsil and end blindly at the fibrous capsule. Under normal conditions they contain desquamated epithelial cells, lymphoid cells and particles of food. Anything that tends to obstruct the orifices of the crypts produces a stasis and an increased susceptibility of the tonsil to infection. It is probable that acute tonsillitis usually begins as one or more focal abscesses in partially obstructed crypts; certainly, it may often be aborted during the early stage by irrigation of the infected crypts with salt solution or sterile water.[13]

During the act of swallowing, saliva and food are forced into the crypts together with any organisms that may be in the mouth. This is of importance in the etiology of both acute and chronic tonsillar infections. During childhood the mouth is frequently contaminated by soiled hands, toys, impure water or food, and milk infected with pyogenic organisms or bovine tubercle bacilli. In some persons, these factors may produce an acute angina; in others, chronic inflammatory changes. Sometimes a hyperplasia of the lymphoid elements of the tonsil results, and, less frequently, a proliferation of the connective tissue. In either case, the efficiency of the tonsil as a protective organ is decreased.

It has been mentioned that with normal nasal passages but few, if any, organisms entering the nose ever reach the naso-pharynx in a viable condition. If, however, there is a partial nasal obstruction with a stasis of secretions; or if infected discharges are draining into the nasal cavity from the conjunctivæ, accessory nasal sinuses or middle ear, the naso-pharynx, pharynx, tonsils and larynx are constantly bathed in a discharge that is irritating and contains bacteria. In the same way the tonsil may become chronically infected, or, at least, less resistant to an acute infection, when there is a discharging alveolar abscess, an infection under a crowned tooth, carious teeth or an extensive pyorrhea.[14]

[6] Bloch, E.: Physiological Investigations of Nasal Respiration. (Translated and abridged by S. DeJager and F. Cohn); Arch. Otol. N. Y., 1888, XVII, 279-307; 1889, XVIII, 1-24.

[7] Thompson and Hewett: The Fate of Micro-organisms in Inspired Air; Lancet, Lond., 1896, I, 86.

[8] Mallory: Pertussis; The Histological Lesion in the Respiratory Tract; J. Med. Research, 1912, XXVII, 115-123.

[9] Wood, G. B.: Tonsillar Infection; Am. J. M. Sc., 1914, N. S. CXLVII, 380-388.

[10] von Kiecki, K.: Bericht über die im Institute angestellten experimentallen Untersuchungen über den Durchtritt von Bakterien durch die intakte Darmschleimhaut; Festschr. enthalt. Arb. u. Tuberk., XXXVI, Internat. Tuberk.-Konf., 1907, 31-33. *Also* Wien. klin. Wchnschr., 1907, XX, 1107-1108.

[11] Wright, J.: Some Critical and Desultory Remarks on Recent Laryngological and Rhinological Literature; N. York M. J. (etc.), 1900, LXXI, 504-508.

[12] Harbitz, F.: Untersuchungen über die Häufigkeit, Lokalization und Ausbreitungswege der Tuberkulose; Kristiania, 1905.

[13] For irrigating the crypts, a blunt, large-bore needle bent at right angles about 1 cm. from the end is attached to an ordinary syringe.

[14] Bass and Johns: Pyorrhea Dentalis and Alveolaris; J. Am. M. Ass., 1915, LXIV, 553-558.

Aside from the changes in the lymphoid tissue in the throat, large numbers of organisms probably get through to the cervical glands and there produce changes in the medullary sinuses that render these glands more liable to infection and less resistant, during an acute angina, to the passage of organisms to the blood stream.

It is also our impression from clinical observation that partial occlusion of the crypts resulting from an incomplete tonsillectomy renders the patient more liable to secondary cardiac, joint or renal lesions. During the past four years, we have seen eight cases with an infectious arthritis and an evening elevation of temperature of several months' duration that illustrate this point well. In every case, there was a history of frequent attacks of tonsillitis for many years preceding, but never with anything but local symptoms. With the idea of stopping these acute attacks, each of these patients had had a partial tonsillectomy. Local anæsthesia had been used in all. In some, the tonsils were removed with a guillotine; in others with an electric cautery. All went well until the next coryza, following which the joint symptoms appeared for the first time. Searching for a portal of entry, portions of the tonsils were found with crypts obscured by scar tissue. After their removal, the joint symptoms gradually disappeared and the temperature returned to normal. What we wish to emphasize is that the partial tonsillectomy, by narrowing the orifices of the crypts of the remaining portion of the tonsil, mechanically made the conditions more favorable for a general infection. Frequently the joint symptoms in such cases will not clear up after a tonsillectomy, presumably owing to the fact that the cervical glands have also become foci of infection.

The palatine tonsil is situated in a fossa between the glossopalatine and pharyngopalatine arches. The glossopalatine arch (anterior pillar of the fauces) contains the glossopalatine muscle, and the pharyngopalatine arch (posterior pillar) contains the pharyngopalatine muscle. During deglutition, the contraction of these muscles compresses the tonsil and, under normal conditions, forces the detritus out of the crypts. When the orifices of the crypts are partially occluded, however, this pressure by the arches tends to force organisms and other foreign material into the parenchyma of the tonsil.[15]

A distinct fibrous capsule separates the tonsil from the surrounding structures. This capsule is a particularly important landmark. Whatever the technique employed in removing the tonsil, the two essentials are: (1) removal of the tonsil together with its entire capsule; (2) control of hemorrhage. If a portion of the capsule remains, it means an incomplete tonsillectomy, and frequently subsequent histories of patients indicate that such operations do more harm than good.

The blood supply of the tonsil is derived from the following sources:

1. The tonsillar ramus of the external maxillary artery. It is important to remember that the main trunk of the external maxillary artery, after leaving the external carotid, may take a decided upward bend before it passes around the ramus of the jaw. The loop thus formed comes in close relation to the inferior portion of the tonsil, and in removing a tonsil, this large artery may be cut unless the field of operation is kept dry and the dissection made as close as possible to the capsule.

2. A large branch of the lingual artery enters near the inferior extremity of the tonsil behind. In order to do a complete tonsillectomy, we have found it necessary to ligate this vessel in every case, both in adults and children.

3. The upper portion of the tonsil is supplied by one of the pharyngeal rami of the ascending pharyngeal artery and by the descending palatine artery—a branch of the internal maxillary.

The nerve supply is mainly through the glosso-pharyngeal.

The lymphatic drainage of the tonsil has been worked out best by Wood.[15] The *tonsil gland* is described as one of the group of deep cervical glands; it lies just beneath the anterior border of the sternomastoid muscle, where it is crossed by the posterior belly of the digastric muscle. It lies external from and slightly anterior to the internal jugular vein; is embedded in loose areolar tissue; and when enlarged, is dislocated outward and forward, presenting at the angle of the mandible.

In order to have a clear understanding of the diseases of the nasopharynx and tonsils and their complications, it is necessary briefly to review the anatomy of the various groups of lymph glands in the neck.

There are two methods by which a lymph gland may become infected. One is by a retrograde thrombosis of the efferent lymph vessels; the other and most common way is through the afferent lymph stream. Anatomically, there are but few, if any direct communications between the cervical lymphatics and the supra-clavicular, axillary, bronchial or mediastinal groups. This fact is also borne out by clinical findings, since practically all the pathological conditions of the cervical glands are secondary to some infection by, or growth in, the mouth, nose, throat or scalp.

The neck on each side is divided by the sternocleidomastoid muscle into an anterior and a posterior triangle. The anterior triangle is subdivided into the submaxillary triangle, bounded below by the digastric muscle and into the two carotid triangles; the superior (above the level of the cricoid cartilage), and the inferior, below the anterior belly of the omohyoid muscle. The posterior triangle is divided by the posterior belly of the omohyoid into the occipital and supraclavicular (or subclavian) triangles.

The arrangement of the lymphatic glands of the neck is as follows:

I. A group of collecting nodes that forms a kind of collar about the upper portion of the neck. These consist of:

1. *Occipital glands,* which drain the adjoining portion of the hairy scalp.

2. *Mastoid or posterior auricular glands,* which drain a portion of the scalp, auricle, and a portion of the posterior wall of the external auditory canal.

[15] Wood, George B.: The lymphatic Drainage of the Faucial Tonsils; Am. J. M. Sc., 1905, CXXX, 216-227.

[15] *Loc. cit.*

3. *The parotid group* receives afferent vessels from the drum, anterior wall of the external auditory canal, cheek, temporal portion of the scalp and possibly the conjunctival sac.

4. *The submaxillary group* drains the cheek, a portion of the external nose, gums, lateral and anterior part of the tongue, and all the lower lip except its central portion.

5. *The submental glands* are situated in the triangle bounded by the anterior bellies of the two digastric muscles and the hyoid bone. The afferent vessels of this group are from the chin, middle of the lower lip, tip of the tongue and adjoining portion of gums and floor of the mouth.

6. *The retropharyngeal glands* receive vessels from the mucous membrane of the nose, accessory sinuses of the nose, nasopharynx, Eustachian tubes and a portion of the tympanic cavity.

II. Two descending chains of glands on each side of the neck (lymphoglandular cervicales profundæ) shaped thus ∧, like an inverted V. The apex of this group of glands lies just below the tip of the mastoid bone and under the sternomastoid muscle. One chain extends down the neck under the anterior border of the sternomastoid and is closely associated with the great vessels. The other group follows the posterior border of the sternomastoid and the anterior border of the trapezius, but is probably not directly connected with the supraclavicular groups of glands.[15] [16] This is an important anatomical feature, because a direct communication between these glands and the descending cervical chains would form a continuous line of lymphatics from the nose, pharynx, mouth and tonsils to the apex of the lungs.

What we wish to emphasize is that all of the six groups of glands previously mentioned drain into these descending chains; that there is a common point of origin and frequent anastomotic connections between the group along the great vessels and those in the posterior triangles; and that they all ultimately empty into the venous system—on the right side through the ductus lymphaticus dexter at the junction of the internal jugular and subclavian veins; on the left side through the thoracic duct.

In tuberculosis of the glands of the neck, we usually find both the anterior and the posterior groups involved. The statistics of pathologists and surgeons agree in finding, in a large majority of the cases of primary glandular infection, the oldest tubercular lesion in the glands around the anterior belly of the digastric and upper portion of the sternomastoid muscle.

Dowd,[17] who has had the largest experience of any one in New York City with cases of this type, finds the oldest lesion in the so-called "*tonsillar gland*" at the angle of the jaw in 86 per cent of his cases. Dowd also points out that in the majority of his patients, the onset is insidious; advice is sought because of rapidly enlarging glands; many patients give a history of frequent attacks of tonsillitis or pharyngitis; and a large proportion come in the late winter and early spring following the winter "colds."

Nicoll[18] reports five hundred cases from Glasgow where tuberculous adenitis is a particularly common malady.

1. In nearly all the enlargement of the glands at the angle of the jaw was first noted.

2. He found evidence of the oldest lesion in the retropharyngeal glands.

3. In 70 per cent the glands were involved on both sides of the neck.

4. He observed, as we have also noted, that the size of the tuberculous glands increases and decreases with each attack of coryza or pharyngitis.

5. He thinks that the glands first enlarge as a result of pyogenic infection, and the tuberculous infection is secondary in the great majority of cases.

Wood in his experimental studies on the infection of the hog's tonsil with anthrax bacilli, comes to the opposite conclusion. He thinks the anthrax bacilli first penetrate the living, unaltered epithelium lining the crypts and by their multiplication devitalize the tissues and so pave the way for a secondary invasion.

Although it is often stated that miliary or pulmonary tuberculosis rarely results from a primary tuberculous cervical adenitis, statistics indicate a greater frequency. Von Noorden[19] reports 149 cases of tuberculous cervical adenitis observed for a period of three years or more after operation. Twenty-eight died of pulmonary or generalized tuberculosis, and 14 others had a pulmonary lesion at the time of the last examination. Fischer,[20] in 1901, collected 1273 cases from the literature that had been observed from one to sixteen years after operation. His results are as follows:

Cured	57 per cent.
Local recurrence	28 per cent.
Died from tuberculosis	13 per cent.

Dowd[21] concludes one of his articles with the statement that from 25 to 30 per cent of all cases of primary tuberculous cervical adenitis will develop tuberculosis elsewhere unless the glands are removed.

[15] *Loc. cit.*

[16] Bitze, H.: Ueber den Weg der Tuberkelbazillen von der Mund- und Rachenhöhle zu den Lungen, mit besonderer Berücksichtigung der Verhältnisse beim Kinde; Virchow's Arch. f. path. Anat. (etc.), 1906, CLXXXIV, 1-55.

[17] Dowd, C. M.: The Surgical Treatment of Tubercular Cervical Lymph-nodes; Ann. Surg., 1905, XLII, 49-74.

[18] Nicoll: The Etiology and Treatment of Chronic Enlargement of Lymphatic Glands with Special Reference to Those of the Neck; Glasgow Med. Jour., 1896, XLV, 29-44.

[19] von Noorden, W.: Über die operative Behandlung der Lymphdrüsen-Tuberkulose und deren Endresultate; auf Grund von 149 Fällen aus der Tübinger chirurg. Klinik; Beitr. z. klin. Chir., 1890, VI, 607-638.

[20] Fischer, F.: Krankheiten der Lymphgefässe, Lymphdrüsen und Blutgefässe; Deutsche Chir., 1901, Lief. 24a, p. 99.

[21] Dowd: *Loc. cit.*

It has been shown by Park and Krumwiede [22] that the majority of the tuberculous glands of the neck in children are due to an infection with the bovine bacillus.[23] This probably accounts for the better prognosis as regards a subsequent pulmonary infection in children. Karewski [24] reports 128 cases of primary tuberculous adenitis in children under 10 years of age, observed for from one to six years after operation. He found that only three had died of pulmonary or generalized tuberculosis. Von Behring for many years has contended that the bovine infections of childhood confer a certain degree of immunity against infection with the human tubercle bacillus in adult life. The incidence of bovine infection in children under four years of age is much greater in the British Isles than in Germany or Austria, but the death rate from pulmonary tuberculosis in Austria is nearly three times as great as in Great Britain.[25]

There are, of course, many causes for an enlargement of the cervical glands aside from tuberculosis. The most common of these are:

1. Eczema, or any chronic infection or irritation of the scalp.

2. Pediculosis capitis. It is not infrequent in the out-patient department to see, both in children and adults, a marked enlargement of the posterior group of glands. The glands often enlarge rapidly, are tender; and the patients may appear quite ill. On several occasions, we have seen temperatures from 101 to 102.5° F., due solely to this condition. The glands will usually subside without suppuration if the pediculi are eliminated.

3. Acute attacks of tonsillitis or pharyngitis are always associated with more or less enlargement of the cervical glands. The degree of glandular reaction depends on the character of the infecting organism. In nasal and pharyngeal diphtheria and scarlet fever, the glandular reaction is marked; in Vincent's angina, there is a diffuse brawny infiltration of the tissues of the neck, and usually a suppuration in some of the glands along the great vessels, which necessitates external drainage. The ordinary tonsillitis causes an enlargement of the glands that usually subsides completely within three weeks or a month unless there is some chronic focus of infection in the tonsils, nasopharynx, sinuses or teeth. In some of the epidemic sore throats,[26] [27] [28] due to a contamination of the milk supply with a particularly virulent strain of streptococcus, the characteristic features are the marked cervical adenitis and the severe constitutional symptoms. We have been able to observe for several years one of the Harvard students, infected during the Boston epidemic. He first came to Baltimore about six weeks after the subsidence of the constitutional symptoms. At this time, the glands at the angle of the jaw on the right side were markedly enlarged, hard, and matted together, but not adherent to the skin and not tender. We advised that nothing be done in an operative way. The following year he went to an Italian university for post-graduate work. The glands had much decreased in size, but following a coryza and mild sore throat, they rapidly enlarged and ruptured through the skin. This sinus continued to drain, and, following another coryza several months later, a second sinus appeared lower down. His Italian physician was sure he had tuberculous adenitis, and he again came to Baltimore for advice. A thorough physical examination, tuberculin tests and guinea-pig inoculation convinced us that the glands were not tuberculous. The tonsils and adenoids were removed, after which the sinuses healed and the glands gradually disappeared. At present, two years after the operation, there are no palpably enlarged glands, and at no time has there been any recurrence of the glandular swelling.

4. Carious teeth and alveolar infections. In this conditions, the submaxillary group of glands is chiefly involved. It is our opinion that caries alone, without infection of the gum or paradental infection, will not cause any appreciable enlargement of the cervical glands.

5. Lues, Hodgkin's disease, the leukæmias and certain nutritional disturbances in children in which there is a general glandular enlargement.

6. Carcinoma or sarcoma. The earliest symptom of these growths in the tonsil or nasopharynx may be a rapid enlargement of the glands near the angle of the jaw.

A palpable enlargement of the upper cervical glands is an extremely common condition, particularly in children. Laser [29] examined 1216 school children:

137 had no enlargement of the cervical glands.

1079 had palpably enlarged cervical glands.

Volland [30] examined 2506 persons from seven to twenty-four years of age:

7 to 9 years of age—96 per cent had enlarged cervical glands.
10 to 12 years of age—91 per cent had enlarged cervical glands.
13 to 15 years of age—84 per cent had enlarged cervical glands.
16 to 18 years of age—69 per cent had enlarged cervical glands.
19 to 24 years of age—68 per cent had enlarged cervical glands.

Volland concludes that a large percentage of these cases have a latent tuberculous infection in their enlarged glands, which may become active and disseminated in later life.

Nicoll estimates that eighty per cent of the enlarged glands of the neck in the children of Glasgow are due to tuberculosis.

These statements must be received with reserve, however, since accurate information regarding the actual percentage of latent tuberculous infection in glands can be obtained only by the removal of a suspected gland and demonstration of the tubercle bacilli in the tissues by histological or cultural methods, or animal inoculation.

[22] Park and Krumwiede: The Relative Importance of the Bovine and Human Types of Tubercle Bacilli in the Different Forms of Human Tuberculosis; J. Med. Research, 1910, XXIII, 205-368.

[23] Also refer to article by Ungermann: Untersuchungen ueber die tuberkulöse Infektion der Lymphdrüsen im Kindesalter; Tuberk. Arb. a. d. k. Gsndhtsamte., 1912, Heft 12, pp. 109-212.

[24] Karewski, F.: Die chirurgischen Krankheiten des Kindesalters; Stuttgart, 1894, p. 168.

[25] Fishberg: Pulmonary Tuberculosis, 1916. (Lea and Febiger.)

[26] Hamburger: The Baltimore Epidemic of Streptococcus or Septic Sore Throat and Its Relation to a Milk Supply; Johns Hopkins Hosp. Bull., 1913, XXIV, 1-11.

[27] Winslow: An Outbreak of Tonsillitis or Septic Sore Throat in Eastern Massachusetts and Its Relation to an Infected Milk Supply; J. Infect. Dis., 1912, X, 73-112.

[28] North, White and Avery: A Septic Sore Throat Epidemic in Cortland and Homer, N. Y.; J. Infect. Dis., 1914, XIV, 124-143.

[29] Laser, H: Ueber die Häufigkeit des Vorkommens von tuberkulösen Halsdrüsen bei Kindern; Deutsche med. Wchnschr., 1896, XXII, 500-504.

[30] Volland: Ueber den Weg der Tuberkulose zu den Lungenspitzen, etc.; Ztschr. f. klin. Med., 1893, XXIII, 50-69.

B. Focal Infection[21] with Especial Reference to the Tonsils.

A focal infection may cause acute manifestations of a systemic intoxication, or it may be so insidious that months or years may elapse before general manifestations appear. The patient himself usually calls attention to the acute focal infection; and with proper and timely treatment the sequelæ, such as a general peritonitis from the appendix, a meningitis, cerebral abscess or general septicæmia from otitic infections, and perhaps a malignant endocarditis from tonsil infections, may be modified or entirely prevented.

It is the chronic focus of infection that in the end-result disables many thousands of people. A chronic focal infection may never give rise to local *symptoms*, but if searched for, the *signs* are as a rule quite evident. Although these insidious localized infections may be located in the abdominal organs, they are usually found in the genito-urinary tract, or in the upper air passages. Occasionally one is found in an unusual place. Dr. Frank Billings has reported two cases of arthritis in which the source was an infected ingrowing toe-nail.

The accessory nasal sinuses, tonsils, nasopharynx and teeth, are the most common situations in the upper air passages. There is clinical evidence, however, that a chronic mastoiditis may be of importance in the etiology, and certainly in the prognosis, of some of the general disorders of the digestive, cardio-vascular and renal systems.

It may be stated as a general law, that the focal infections that give rise to general systemic disorders are those with some mechanical obstruction of the natural channels of drainage. This has been true in our experience with nose and throat infections. In alveolar and tooth infections, it is usually the cases with infected pulp cavities that have been incompletely cleaned out and covered with a filling or crown that give rise to subsequent arthritic, anæmic or neurasthenic symptoms. Of the sinus infections, it is usually the cases in which there is enough obstruction to drainage to produce slight morning headaches that most frequently have some secondary manifestations of a general intoxication. We have, however, had a few very striking exceptions to this rule in sinusitis associated with arthritis.

The law mentioned above seems especially applicable to the tonsil. The majority of our cases with arthritic and renal lesions, in which the ultimate result was most satisfactory, have given a history of frequent attacks of tonsillitis during childhood; of one or more unusually severe tonsillitis attacks several weeks or months preceding the onset of their illness; or of a partial removal of their tonsils by operative measures or by means of the electric cautery. The end-result, as far as the tonsil is concerned, is the same in each instance—the orifices of the crypts become partially occluded with scar tissue. A tonsillitis most frequently begins as an abscess in the lumen of the crypts, and under normal anatomical conditions, the contents of these crypts drain into the mouth. If the orifices of the crypts are partially occluded, however, the toxines and organisms more readily pass lateralward to the cervical lymph glands.

It is our opinion, as yet unproven by any large series of cases, that during the early stage of an acute tonsillitis there is a general bacteriæmia. This seems to be particularly true in patients with small, embedded tonsils and an abundance of scar tissue around the orifices of the crypts. If the organism happens to be of low virulence, or one to which there is a sufficient degree of immunity, it is quickly killed off, and there is no possibility of obtaining a positive blood culture except on the day that the general manifestations of the disease are at their height. If, on the other hand, it chances to be a viridans, or one of the streptococci that E. C. Rosenow has shown may have a specific affinity for certain organs, then serious metastatic infections occur.

It is possible that bacteria do not have a specific affinity for a given organ, but, as Billings has suggested, the local tissue conditions, supply of oxygen, etc., may be more favorable for the growth of the organism in one locality than in another. In malignant endocarditis, for example, Streptococcus viridans finds its way into the blood stream by one of the several possible portals of entry. This organism differs from other strains of streptococci in that it is less virulent and requires a high oxygen tension for its growth. Once in the blood stream, these organisms lodge in the capillaries of the heart valves,[22] thrombi form and finally the characteristic vegetations. These vegetations furnish an excellent culture medium, and from them bacteria and occasionally infected emboli are liberated in the general circulation. It is probable that at the time of the primary infection, and at frequent intervals subsequently, the organisms lodge in capillary beds elsewhere, but the local conditions are not so favorable for their growth as they are in the heart valves. It must be remembered, however, that pneumococci, the pyogenic cocci and other organisms, may give rise to an endocarditis, and it is difficult to explain their selective location in the heart valves on the same theory.

However this may be, it is our experience that the patients with tonsils that have been damaged by previous infections, or partial operative procedures, are more prone to have some general disorder, following either an acute or chronic tonsillitis, than are those with approximately normal tonsils or with a first infection.

The tonsil is not the only portal of entry. Organisms probably pass through the mucous membrane of the nose, nasopharynx and pharynx more frequently than is generally supposed. We have, on several occasions seen, in patients

[21] Refer to articles by: Billings, Frank: Forchheimer's Therapeusis of Internal Diseases, 1914, V, 169-181. Beck, J. C.: J. Am. Med. Assn., 1914, LXIII, 1636-1643. Ophüls, W.: J. Am. Med. Assn., 1915, LXV, 1719-1725. Articles in Vol. I, Kolle and Wassermann Handb. d. pathogen. Mikroorg., 2. Aufl., Jena, 1912. Zinsser, H.: Infection and Resistance, 1914, Macmillan Co. Barker, L. F.: The Treatment of Certain Chronic Infectious Processes, Brooklyn Med. J., 1906, XX, 345-351.

[22] Refer to article by Bayne-Jones: Vascular Supply of the Heart Valves. To appear in the Anatomical Record.

whose tonsils and adenoids have been thoroughly removed, an enlargement of the glands of the neck, a return of arthritic symptoms, repeated attacks of rheumatic fever, and, especially frequently, a recurrence of chorea after a mild coryza or pharyngitis. It is possible that in these cases the specific organisms have remained latent in the cervical glands, and are activated and mobilized by the acute catarrhal process in the nose or pharynx. This undoubtedly occurs in tuberculous infections. A latent tuberculous focus in a gland or in the lung may become active and disseminated as a result of the hyperæmia occasioned by a neighboring catarrhal or pyogenic infection.

A chronic tonsillar infection may exist for an indefinite period without local symptoms, but we have found with few exceptions that the adjoining cervical lymph glands are enlarged and often slightly tender on palpation in these cases. This will be referred to later, for we regard the enlargement of the neighboring glands as one of the most important points in determining whether or not there is a chronic infection of the tonsil.

We have already referred to the experimental and post-mortem studies that show that particles of dust, granules of the aniline dyes and bacteria may pass through intact mucous membranes without damage to the tissues locally; and that lymph glands may contain tubercle bacilli and other organisms without histological or clinical evidence of their presence. It has been shown that tubercle bacilli may remain latent in a gland for long periods and finally produce general manifestations as a result of continued re-infection, or a decrease in the general resistance, due to fatigue, insufficient food or general unhygienic surroundings.

According to E. C. Rosenow and F. Billings, the joint, renal, muscular and valvular lesions secondary to a focal infection are due to bacterial thrombi. This means that the organisms get into the general circulation by way of the lymphatics. Clinical experience indicates that it is the toxines that are responsible for the joint symptoms in most of the arthritides. In gonorrheal arthritis, the organisms may usually be demonstrated in the joints, but in other forms the local cultures are almost invariably sterile. Many orthopedists believe that joint changes may be secondary to absorption from the gastro-intestinal tract, due to a ptosis or kink in the large bowel; and some entirely ignore the theory of focal infections.

Jackson,[33] in 1913, studied the joint reaction histologically at varying periods after an intravenous inoculation of rabbits with virulent streptococci. Two hours after intravenous administration, the organisms could be found in the capillaries of the periarticular tissues; intravascular collections of leucocytes were present after 10 hours, and after 24 hours an exudation and migration of leucocytes into the joint cavity had occurred.

Animal experiments, such as the intravenous injection of living organisms in rabbits, do not necessarily, in our experience, reproduce the clinical conditions. We have found that joint or periarticular suppuration will result in about 50 per cent of the animals injected. This is true when the streptococci injected are obtained from a focal lesion in an arthritis case, the throat in scarlet fever, the urine, an empyema or an accessory nasal sinus infection. Furthermore, these organisms may produce joint lesions in some rabbits, but fail to have any effect on others. Frequently, streptococci isolated in pure culture from a focal infection in a patient with multiple arthritis may fail to produce any joint lesion in rabbits, even though the subsequent clinical course of the patient would indicate that this organism was responsible for the arthritic symptoms. In other words, the reaction of the tissues—chemical, immunological or circulatory—is more important in determining the location of an infection than is the specific affinity of a given organism for certain organs.

Faber,[34] from his experimental work in 1915, has concluded that the synovial membrane of a rabbit's joint may be *sensitized* by either of the following methods:

1. By repeated intravenous injections of streptococci of attenuated virulence.

2. By injecting into the joint cavity a suspension of killed streptococci. After all local reaction has disappeared, intravenous injections of minute doses of living streptococci of the same strain will give rise to a definite arthritis in the joint previously sensitized.

After a rabbit's joints are once sensitized by either of these methods, an arthritis may develop following the intravenous administration of doses so small that in a normal animal no symptoms whatever would result. The joint reaction may not occur, however, if any other organism, such as the pneumococcus, staphylococcus or B. typhosus is used, either for sensitizing the joint or for the subsequent intravenous injection. The organism used must be a streptococcus and the same strain must always be employed in both the joint and the intravenous injections.

Faber's conception of the etiology of a relapsing arthritis is that it is due to the effect of a virus upon a homologously sensitized joint. This theory might explain the frequent recurrence of arthritis after an attack of rheumatic fever; also some of the more chronic forms of arthritis with a small focus of infection in a tooth, tonsil, accessory nasal sinus, prostate, etc.

The one great principle in the therapy of systemic diseases secondary to a focal infection is a thorough removal of the primary focus. An infected tooth in a patient with arthritis is probably best treated by extraction; an infected accessory nasal sinus should be well drained, and, in many instances, the chronically infected mucosa lining the sinus should also be removed; radical surgical procedures should be resorted to, if necessary, to control a chronic otorrhea.

A partial tonsillectomy, due to the obstruction of the crypts of the remaining portion by scar tissue, may transform a re-

[33] Jackson, L.: Experimental Streptococcal Arthritis in Rabbits; Jour. Infect. Dis., 1913, XII, 364-385.

[34] Faber, H. K.: Experimental Arthritis in the Rabbit. A Contribution to the Pathogeny of Arthritis in Rheumatic Fever; J. Exper. Med., 1915, XXII, 615-628.

latively harmless hypertrophied tonsil into one that subsequently gives rise to the most serious general disorders.

A tonsillectomy, properly done, is really a major surgical procedure, and should not be undertaken unless the operator is thoroughly familiar with the principles and practice of the general rules of surgery. Three of the most important rules of surgery are absolute cleanliness, protection of the tissues against needless injury, and control of hemorrhage. It is unfamiliarity with the methods of controlling bleeding that is responsible for the incomplete tonsillectomies and many of the post-operative complications. This will be referred to later. Serious bleeding not infrequently occurs and occasionally with a fatal result. One of us once heard a prominent laryngologist reassure a patient with a post-operative hemorrhage by telling him that the bleeding would surely stop when his blood-pressure became low enough.

In addition to removal of the primary focus of infection, other therapeutic measures are of great importance in the treatment of these patients with some general disorder secondary to a focal infection. It must be remembered that metastatic infections in the adjoining lymph glands may remain after the removal of the original focus. Every effort should be made to maintain the natural defences of the body. All exhausting and depressing measures, such as an insufficient diet, mental or physical fatigue, and frequent hot baths, should be avoided. Rest, good food, fresh air and sunshine are the essentials. They are purposely mentioned in this order to emphasize the importance of rest.

Other measures might be mentioned, such as the hyperæmia obtained by baking, in joint affections; the use of drugs, and, finally, the use of vaccines. The use of stock vaccines is unscientific and often dangerous. Autogenous vaccines in the chronic forms of arthritis and myositis have seemed to possess some value, but the good result in the management of these cases is due more largely to improvement in health by hygienic measures (Billings). This is just as true of the treatment by vaccines of chronic sinus and ear infections as it is for arthritis.

Summary.—Focal infections may give rise to acute rheumatic fever, simple and malignant endocarditis, septicæmias due to various organisms, some types of arthritis, myositis and nephritis, neuritis, arteriosclerosis, general debility, and a great variety of nervous disorders designated as neurasthenia.

Focal infections may occur anywhere in the body, but are perhaps more frequent in the accessory nasal sinuses, tonsils, teeth, gums, and genito-urinary tract.

Neighboring glands become secondarily infected and may harbor the organisms and continue to infect the blood-stream after the removal of the original focus. On this account general measures in the treatment of systemic diseases secondary to focal infections are of great importance.

Organisms entering the blood-stream by way of a focal infection may have a specific affinity for the endocardium, the synovial membranes, the blood-forming organs, the muscles or the kidneys. On the other hand, the selection of the organ involved may be due to the local chemical, mechanical or circulatory conditions.

As a general rule, the focal infections that are most likely to give rise to secondary disorders elsewhere in the body are those in which there exists some obstruction to the natural channels of drainage.

A chronic tonsillitis may be defined as a condition of the tonsils in which there is an increase of fibrous tissue, adhesions between the tonsil and pillars, or some other evidence of an inflammatory reaction together with a palpable enlargement of the deep cervical glands at the angle of the jaws.

A chronic tonsillitis may result from frequent acute attacks, or from a long continued sub-acute inflammatory process secondary to pyorrhea, caries of the teeth, obstructed nasal passages, or chronic infection of the accessory nasal sinuses or ears. In each of these conditions, the tonsils are more or less constantly bathed with irritating discharges. When searching for a focus of infection, one must not forget that the evident chronic tonsillitis may be *secondary* to one of the above-mentioned conditions. In such cases the removal of the tonsils without attention to the nose, sinuses, ears, or condition of the teeth, may give very disappointing results. The patient may continue to have attacks of pharyngitis with swelling of the cervical glands, or inflammatory conditions of the larynx and bronchi that were never present before the operation. In this respect, the tonsils and adenoids apparently protect the lower air passages.

From the standpoint of the treatment of an infectious arthritis or a glomerulo-nephritis, the removal of chronically infected tonsils, leaving infected teeth or sinuses, may be of no benefit, but an actual injury to the patient. In the first place, the surgical procedure is quite a shock to such patients, and most important is the fact that organisms in the discharge from the sinuses, teeth, etc., may continue to pass through the mucous membrane of the pharynx to the cervical lymph glands.

In every case where a tonsillectomy is contemplated, it must first be determined whether the tonsil infection is localized or is secondary to some chronic infection in the mouth or upper air passages. If the nasal passages and teeth are normal, a removal of the tonsils and adenoids alone is indicated. If, however, there is any marked nasal obstruction, sinus infection, alveolar abscess, or extensive pyorrhea, these conditions should first be remedied before the operation on the tonsils is undertaken.

These precautions not only insure a relatively clear field for the tonsil operation, but the ultimate results of the tonsillectomy will be more favorable in any large series of cases.

C. Portals of Entry of Tubercle Bacilli.[35]

There are two main pathways by which the tubercle bacillus gains entrance to the body; one is by direct inhalation and and the other by ingestion. Trauma is a third and relatively

[35] Bacmeister, A.: Wesen und Gang der tuberkulösen Infektion bei Entstehung der menschlichen Lungenphthise; Ergebn. d. inn. Med. u. Kinderh.; Berl., 1913, XII, 515-552.

infrequent cause of infection with the tubercle bacillus. There are many cases on record, however, of tuberculous infection in the children of Russian Jews that date from the religous ceremony of circumcision.

Direct Inhalation.—There is considerable evidence against the view that the inhalation of tubercle bacilli is the most common mode of infection.

1. The dust on the street contains very few living tubercle bacilli. It is generally believed by tuberculosis experts that no one ever contracts this disease out-of-doors. As long as the sputum is moist, the bacteria cannot be blown about, and they are rapidly destroyed by the process of drying, by exposure to sunlight, dilution by rains, etc. The dust raised in houses by the various cleaning processes, however, often does contain virulent organisms, as was shown by Cornet and others. Virulent bacilli may be found in hallways and dark corners of rooms for months after their introduction.

2. The bacteriological examinations of the smaller bronchi that have been made in persons meeting an accidental death, and by means of the bronchoscope in normal persons, all show that the lower air passages are for the most part sterile.

This is probably due to the various protective mechanisms—the mucous membrane of the nose, the lymphoid tissue in the throat, the abundant secretion of mucus in the upper air passages, and the ciliated cells of the trachea.

3. The tubercle bacillus is protected by a very resistant, waxy capsule, and may therefore be analagous to a particle of dust. It is difficult, however, on the inhalation theory to explain why the bacilli should find their way to and set up the diseased process almost invariably in the apex of the lung, whereas the organisms that find their way to the basal portion of the lungs are destroyed or in some way prevented from forming primary tubercles in this situation.

Ingestion.—This term includes the passage of organisms through the mucous membrane of the entire digestive tract, from the lips to the rectum.

A most important fact is that the tubercle bacilli may pass through normal skin and mucous membrane without leaving any gross or microscopical evidence of their presence. These tubercle bacilli may lodge in the glands draining the area of their portal of entry and set up a diseased process locally; may remain latent in the glands for long periods without clinical evidence of their presence; or, finally, may pass through a series of glands with or without causing local disease, and thus enter the blood stream.

The healed or arrested tuberculous process so frequently found at autopsy in the glands of the neck, at the root of the lungs, or in the mesentery, means that the organisms have gained entrance by way of the throat, the mucous membrane of the trachea or bronchi, or through the walls of the intestine. Other organisms, such as the cocci, undoubtedly gain entrance by the same channels, but not being endowed with the waxy capsule and resistant properties of the tubercle bacillus, they are, for the most part, promptly killed by the body fluids.

In the experimental infection of guinea-pigs by the inhalation method, where the head of the animal is confined in a tube and enormous numbers of virulent bacilli inspired, as much, if not more, tuberculosis is found in the cervical, peribronchial and mesenteric glands as in the lungs.

The infection of children with tuberculosis is probably for the most part by ingestion. It has been shown by Park and Krumwiede that the bovine bacillus is responsible for 61 per cent of the tuberculous glands of the neck in children under five years of age. The infection in these children must be due entirely to the ingestion of infected food, and the passage of organisms through the mucous membrane or lymphoid elements of the throat. It is fortunate that the bovine bacillus rarely produces pulmonary lesions (only four cases of pure bovine infection were found in the 831 cases of pulmonary tuberculosis examined by Park and Krumwiede) for, otherwise, infant mortality from tuberculosis would be enormously increased. There is evidence that the bovine infection of childhood tends to immunize them against a subsequent infection with the human bacillus.

The incidence of bovine infection becomes less frequent as the age increases. (Park and Krumwiede.)

1. In 39 cases of tuberculous cervical adenitis in children under 5 years of age, the human bacillus was the predominating organism in 15, and the bovine bacillus in 22.

2. In 58 cases of cervical adenitis in children from 5 to 16 years of age, 36 were due to the human, and 22 to the bovine bacillus.

3. In 37 cases of cervical adenitis in adults, 36 were due to the human and 1 to the bovine.

The infection of children with the human bacillus is largely due to the fact that for the first six or seven years of its life, the average child spends the greater part of each day on the floor, and its soiled hands and toys are frequently in its mouth.

In the house where a tuberculous person resides, the floors become infected by coughing and careless expectoration; but the real tragedy is the infection of children in this way in houses where there has been no tuberculosis. Infection of the floors in such houses is due to the carrying in of virulent tubercle bacilli on the shoes. It is in this way, rather than through dust infection, that expectoration on the sidewalks or in public conveyances becomes a serious factor in the spread of the disease.

The seriousness of careless expectoration on the street or in public places might be more fully appreciated if the public realized that in the great majority of persons with tuberculous infections of all kinds, the principal lesion is in the lungs. In Germany, it has been estimated that eleven-twelfths of all the cases of tuberculosis of all ages have a pulmonary lesion. This means that practically every case of tuberculosis has at some time tubercle bacilli in the sputum, and carelessness in disposing of the excreta at this period may lead to the infection of many others, particularly children.

Tuberculosis of the Tonsils and Adenoids.—We purposely speak of this group of 46 cases as "apparently primary tuberculosis" of the tonsils and adenoids, for we realize fully that the incompleteness of our data would not justify any dogmatic

statement as to whether or not the tonsillar lesion was the only tuberculous focus in the body.

As to the incidence of focal tuberculous lesions in the body, von Behring[26] states that Naegeli of Zurich, in a series of post-mortem examinations made for the purpose of establishing the importance of Koch's bacillus, found:

1. Infants under 1 year of age failed to show any focal lesion.
2. From 1 to 5 years of age 17% had some focal tuberculous lesion.
3. From 5 to 14 years of age 33% had some focal tuberculous lesion.
4. From 14 to 18 years of age 50% had some focal tuberculous lesion.
5. From 18 to 30 years of age 96% had some focal tuberculous lesion.
6. After 30 years of age, every body coming to autopsy has some evidence of an infection with the tubercle bacillus.

These amazing statistics have been confirmed in practically all the thickly populated centers of the world.

There are two methods of making a diagnosis of a focal tuberculous lesion with absolute certainty: one is the finding of the bacilli of Koch in the diseased process by microscopic examination or demonstrating their presence by animal inoculation; and the other is by the reaction of the patient to tuberculin.

In our series of cases with focal tuberculous lesions, neither of these diagnostic procedures has been carried out systematically. The diagnosis of a tuberculous process in the tonsil or adenoids in our cases is based on the presence of microscopical tubercles. In 24 cases there was characteristic caseation. The diagnosis of tubercles in tonsils where there is no caseation is based on the local collection of so-called epithelioid cells, with the characteristic flattening of the peripheral cells and a surrounding collection of small lymphocytes. Foreign-body giant-cells occur not infrequently in the tonsils, but we have carefully excluded all cases from this series in which there was some doubt as to whether the lesion was due to a foreign-body reaction, or to the tubercle bacillus.

In regard to the tuberculin test, it has been definitely established that a positive reaction never occurs unless there is an anatomical tubercle in the body. An enormous intravenous dose of tuberculin may be given a normal animal without the slightest effect; whereas a relatively small amount of tuberculin will cause a violent reaction or promptly kill an animal with a small, localized tuberculous lesion.

A large percentage of children beyond the second year, and practically every adult, will give a positive tuberculin reaction. "Tubercular infection, however, is far from meaning tubercular consumption." Whether the entrance of tubercle bacilli into the body becomes harmful or not, depends upon several factors. According to Dr. Trudeau, "Tuberculosis attacks the weak, cancer the strong."[27] By "the strong," he means the person whose tissues tend to proliferate actively when subjected to any bacterial or mechanical irritation; and by "the weak," those persons whose tissues do not react promptly or energetically to such stimuli.

The degree of virulence of the infecting organism is another important factor. In the Saranac laboratory there is a strain of the tubercle bacillus that has almost completely lost its virulence as a result of many years of cultivation on artificial media. Even large doses will not produce visceral lesions in guinea-pigs, although they produce the characteristic caseating lesions in the lymph glands.

In focal tuberculous lesions, particularly in the cervical glands, the quantity of the infecting bacilli and whether we have to do with a single infection or oft-repeated infections over a long period, are factors of greater importance. Thus a primary tuberculous infection of the tonsils or adenoids may be responsible for a recurring tuberculous cervical adenitis.

A histological tubercle is a non-vascular structure that is nourished by a process of osmosis and diffusion. Any acute catarrhal or pyogenic inflammation in the neighborhood of a tuberculous lesion, even though the latter has long been latent, may seriously alter the prognosis. The hyperæmia associated with such inflammatory conditions results in an increased absorption of the poisons made by the tubercle bacilli, and the lassitude, slight evening rise of temperature and loss of appetite so frequently seen after a spring "cold" may often be explained in this way. But what is more serious is that the tubercle bacilli themselves may escape from a latent focus at such times and result in a widespread dissemination of the disease.

It has been pointed out previously that anatomical and experimental evidence indicates that in all the infections of the upper cervical glands, with the exception of the relatively rare retrograde infections, the organisms gain entrance through the mucosa or lymphoid tissue of the nose, throat and mouth. Dowd has called attention to the fact that a large proportion of patients with tuberculous adenitis first apply for medical advice after a "cold." Is it not possible that the majority of these patients have a primary lesion in the tonsils or adenoids, and even though the affected cervical glands are removed, the recurrence and subsequent dissemination of the disease may to a large extent be due to the neglected throat infection?

There are but few statistical studies on which to base an answer to this question. We know of no publication on the relation of tuberculosis of the tonsil and adenoids to cervical adenitis that is based on a thorough scientific study of the throat and glandular conditions. It is certain that the routine histological examination in each case of a few sections of the tonsils and adenoids removed at operation will fail to disclose the true incidence of tuberculous infections in these tissues. We have had 23 cases of tuberculous adenitis, proved by re-

[26] von Behring, E.: Über Lungenschwindsuchtentstehung und Tuberkulosebekämpfung; Deutsche med. Wchnschr., 1903, XXIX, 689-697.

[27] These same words will be found among the conclusions of Dr. Maud Slye's article on the Incidence and Inheritability of Spontaneous Cancer in Mice; Jour. Med. Research, 1915, XXXII, 159-200.

moval and microscopical examination of a gland, in which no clinical or histological evidence of tuberculosis was found in the tonsils or adenoids removed at operation. This does not necessarily mean that the lymphoid tissue in the throat was not infected. In none of these 23 cases were the tonsils and adenoids stained for tubercle bacilli; no attempt was made to cultivate the tubercle bacilli from the tissues, and animals were not inoculated. The routine histological examination we refer to consists of a study of only four or five sections of the tonsils and adenoids from each case, and therefore focal tuberculous lesions might easily be overlooked.

The great majority of the cases with tuberculous cervical adenitis are operated on by a general surgeon who ignores the nose and throat condition and soon loses sight of his patients.

We have already referred to the observations of von Noorden on 149 cases of primary tuberculous adenitis observed for a period of three years or more after the operation on their glands; 28 had died of pulmonary tuberculosis, and 14 others had symptoms of a pulmonary infection. Fischer collected from the literature 1273 cases that had been observed from one to sixteen years after operation on their glands; reported cured 57 per cent; local recurrence in 21 per cent; died from pulmonary tuberculosis 13 per cent. It cannot be denied that in a certain proportion of these cases the patient probably had a pulmonary lesion and tubercle bacilli in the sputum at the time of the operation, and the glandular infection was secondary. Others may have had an arrested pulmonary lesion that was activated by the anesthetic; but in a large group the portal of entry is in the throat, and the primary lesion, if searched for, will probably be found in either the tonsils or the adenoids. Bartel and Spieler [38] have found that 11 per cent of the animals inoculated with tonsils developed tuberculosis; yet in no instance did they find histological or gross tuberculous lesions in the tonsils used for the inoculations. Harbitz also obtained positive inoculation results with tonsils and cervical glands that showed no microscopical tuberculous lesions.

In view of these facts and the anatomical relation of the lymphoid structures in the throat to the cervical glands, it would seem to us that the tonsils and adenoids should be removed whenever there is any hyperplasia of the cervical glands that is not due to lues, new growth, or any of the blood diseases. We would also exclude the group especially frequent in children, where the hyperplasia of the cervical glands is a part of a general glandular enlargement.

Of a total of 1000 tonsillectomies at The Johns Hopkins Hospital in which the tonsils and adenoids have been examined histologically:

139 were from colored patients, and of these 11, or 7.9 per cent, were tuberculous.

861 were from white patients, and of these 35, or 4 per cent were tuberculous.

[38] Bartel, J. and Spieler, F.: Experimentaluntersuchungen über natürliche Infektionsgelegenheit mit Tuberkulose; Wien. klin. Wchnschr., 1907, XX, 1144-1150.

Age Incidence of those with Tuberculous Lesions of the Tonsils or Adenoids.—The youngest patient was 4, the oldest 34 years of age.

1. Between the ages of 4 and 5 there are 5 cases: Tuberculous lesions were found in the tonsils alone in 4 cases; in the adenoids alone in 1 case.

2. Between the ages of 5 and 10 there are 14 cases: Tuberculous lesions were found in the tonsils alone in 9 cases; in the adenoids alone in 5 cases.

3. Between the ages of 11 and 15 there are 10 cases: Tuberculous lesions were found in the tonsils alone in 6 cases; in the adenoids alone in 4 cases.

4. Between the ages of 16 and 25 there are 13 cases: Tuberculous lesions were found in the tonsils alone in 7 cases; in the adenoids alone in 3 cases; in both the tonsils and adenoids in 3 cases.

5. In those over 26 years of age there are 4 cases: Tuberculous lesions were found in the tonsils alone in 3 cases; in the adenoids alone in 1 case.

In 23 of the 46 cases with a tuberculous lesion in either the tonsils or the adenoids the size of the deep cervical glands at the angle of the jaw, the periadenitis and the history all suggest a tuberculous cervical adenitis.

In 20 of these 23 cases with clinically tuberculous glands of the neck, there was a history of frequent attacks of tonsillitis.

Clinical Symptoms.—In 40 of the 46 cases, there was a history of frequent attacks of tonsillitis.

In 43, the deep cervical glands at the angle of the jaws were palpably enlarged. In 23 of these cases, there was a periadenitis, suggesting tuberculous glands.

In five, an unexplained elevation of temperature had been noted for several weeks before their admission to the hospital.

In four, the tonsils were removed on account of an arthritis of the infectious type. In this group particularly, there was no suspicion of a tuberculous lesion until the routine histological examination of the tonsils.

In one, the tonsils were removed on account of blood and albumin in the urine—a glomerulo-nephritis.

In one, the tonsils and adenoids were removed on account of a tuberculous iritis. In this case, tubercles were found in the adenoids alone.

Clinical Appearance of the Tuberculous Tonsils.—It was impossible in any of these cases to foretell from the appearance of the tonsil whether or not it contained a tuberculous focus. Even after the tonsil had been removed and sectioned, we were never able on macroscopic examination to differentiate with any certainty a tuberculous lesion from a chronic inflammatory reaction with detritus in the crypts. On microscopic examination, a collection of detritus in a crypt or an area of hyaline degeneration with foreign body giant cells may closely simulate a tuberculous process.

The tonsil and pharyngeal lesions so frequently seen in advanced cases of pulmonary tuberculosis, are always asso-

CHART I.—TUBERCULOSIS OF TONSILS OR ADENOIDS. ABSTRACT OF CASES IN TABLE I.

Age 1 to 5 years.

		Condition at time of operation.						Condition at present time.				
No. of case.	Age.	Family history of Tbc.	Cond. lungs at time of operation.	Size of tonsils and adenoids.	Size cervical glands time of operation.	Tbc. test time of operation.	Length of time observed since operation.	General health.	Cervical glands.	Tuberculin test.	Condition of throat.	Remarks.
1	4	B. has Tbc. tonsils.	Normal.	Large.	Hickory-nuts.	—	4½ years.	Good.	Not palpable.	—	Normal.	Lungs normal. No symptoms of Tbc.
2	5	None.	"	Very large.	5×8 cm. on left.	—	3 years.	"	"	—	"	Lungs normal. No symptoms of Tbc.
3	4	—	"	Large.	6×2 cm. on right.	Pirquet +	3 years.	"	"	Pirquet +	"	Lungs normal. No symptoms of Tbc.
4	5	None.	"	"	5×3 cm. on right.	Pirquet +	2 years.	"	1×2 cm. on right.	—	"	Lungs normal. Glands suppurated; treated by local incision; sinus closed. Temperature normal.
5	5	—	Dullness at apices; no râles.	Small.	Large; especially on right.	Pirquet +	2¾ years.	"	Smaller.	Pirquet +	"	Lungs as before; X-ray shows mediastinitis.

Age 6 to 10 years.

6	8	None.	Dullness at both apices.	Very large.	Enlarged on both sides.	Pirquet +	3½ years.	Good.	No glands on right; small on left.	Pirquet + Calmette 1%+	Normal.	Lungs as before.
7	10	"	Normal.	Large.	Not palpable.	—	3 years.	"	Not palpable.	—	"	" normal.
8	9	"	"	Very large.	Enlarged; matted.	Pirquet +	3 years.	"	" "	Pirquet. ?	"	" "
9	9	"	"	" "	2×3 cm.	Pirquet +	2 years.	—	1½×1 cm.	Pirquet +	"	" "
10	10	"	"	Enlarged; especially right.	2×3 cm.	—	1½ years.	—	1.5×3 cm.	Pirquet +	"	" " ; glands on left suppurated.
11	10	"	"	Very large.	Enlarged on both sides.	—	2½ years.	Good.	½ cm.	Pirquet +	"	Lungs normal.
12	7	—	"	" "	Enlarged on both sides.	Pirquet +	2 years.	"	Smaller.	Pirquet +	"	" "
13	7	None.	"	Large.	Enlarged on both sides.	—	1½ years.	"	"	—	"	" "
14	7	"	"	"	4×3 cm. on right; enlarged on left.	Pirquet +	1 year.	Improved.	Glands on R. removed; smaller on left.	—	"	....
15	8	"	"	Very large.	6×4 cm. on left; 2×3 cm. on right.	—	Died. Tbc. meningitis.	....	....	....	....	....
16	10	Mother and grandmother.	"	Enlarged; especially on left.	Enlarged.	Pirquet +	1 year.	Improved.	Smaller.	Pirquet +	Normal.	Lungs normal.
17	10	—	"	Very large.	1 cm. both sides.	—	9 months.	Good.	"	Pirquet +	"	" "
18	10	None.	"	Enlarged.	4×8 cm. on left.	Pirquet +	1½ years.	"	Not palpable.	—	—	—

Age 11 to 15 years.

19	14	None.	Normal.	Very large, especially right.	6×10 cm. on left; palpable on right; incised on left.	—	3½ years.	Good.	Palpable.	—	Normal.	Lungs normal.
20	9	—	"	Large; especially left.	7×5 cm. on left. Incised.	—	3½ years.	"	—	—	—	—
21	11	None.	"	Partially removed.	8×10 cm. on left; slightly enlarged on right.	Pirquet +	2½ years.	"	....	Pirquet +	Normal.	Lungs normal; glands on left suppurated; incised; healed.
22	14	"	"	Very large.	5×7 cm. on left; palpable on right.	Calmette +	8 months.	Improved.	Glands larger.	—	"	Lungs normal.
23	13	"	"	" "	6×4 cm. on right; incised; palpable on left.	Pirquet +	1 year.	Good.	Smaller.	Pirquet +	"	" "
24	12	—	"	Not enlarged.	5×3 cm. on both sides.	—	9 months.	"	1×2 cm.	—	"	" "
25	15	—	"	Partially removed.	Enlarged both sides; incised on right.	Pirquet + Calmette +	1½ years.	"	Smaller.	Pirquet +	"	Lungs: impaired percussion note at both apices.
26	12	—	"	Partially removed.	Slightly enlarged.	—	1½ years.	"	"	Pirquet +	"	—
27	14	—	"	Small.	1½ cm. both sides.	—	1 year.	"	"	—	"	Lungs normal.
28	13	—	"	Enlarged.	2×3 cm. both sides.	—	9 months.	"	Smaller on right: same on left.	Pirquet +	"	" "
29	11	—	"	Very large.	2 cm. both sides.	Pirquet + Calmette 1%0.	9 months.	Not improved.	Recurrence tbc. glands.	—	—	Lungs: suspicious involvement of right apex.

CHART I.—Continued.

Age 16 to 25 years.

		Condition at time of operation.						Condition at present time.				
No. of case.	Age.	Family history of Tbc.	Cond. lungs at time of operation.	Size of tonsils and adenoids.	Size cervical glands time of operation.	Tbc. test time of operation.	Length of time observed since operation.	General health.	Cervical glands.	Tuberculin test.	Condition of throat.	Remarks.
30	19	—	Imp. of left apex & râles.	Large, especially left.	Enlarged.	—	3 years.	Good.	Not palpable.	—	Normal.	—
31	18	—	Normal.	Enlarged.	"	—	2¼ years.	"	None on right, ½ cm. on left.	—	"	Lungs normal.
32	25	Grandfather died pul. Tbc.	"	"	Enlarged, especially on right.	—	1½ years.	"	—	—	—	—
33	20	None.	"	Very large.	Not enlarged.	—	2½ years.	"	Not enlarged.	—	Normal.	—
34	18	"	"	R. large; L. small.	" "	—	3 years.	Not improved	Not enlarged.	—	—	—
35	19	"	Imp. at R. apex.	Not large	3×8 cm. on left sinus.	Calmette 1%. +	2½ years.	Good.	Sinus healed in 6 months.	—	—	Lungs normal. Sinus reopened in 2½ years; glands excised.
36	24	"	Normal.	" "	None palpable.	—	2 years.	"	Not enlarged.	—	—	Lungs normal.
37	22	"	"	" "	5×8 cm. on right; incised.	—	2 years.	—	Recurrence on R.; enlarged on left.	—	Normal.	Lungs: pleurisy 1½ years after operation.
38	19	"	"	R. larger than left.	5×8 cm. on right; enlarged on left.	—	9 months.	Good.	2×3 cm. on right; not palpable on left.	—	"	Lungs normal.
39	23	"	"	Small.	Large mass on right; enlarged on left.	Calmette 1%. +	9 months.	—	Discharging sinus on right.	—	"	Lungs: slight impairment at right apex; with râles.
40	18	—	"	Slightly enlarged.	None palpable.	—	6 months.	Improved.	Not enlarged.	—	"	Lungs normal.
41	10	None.	Thickened pleura.	R. larger than left.	6×4 cm. on left.	Calmette 1% 0 5% doubtful.	9 months.	Poor.	Sinus above left clavicle,	—	—	Lungs: evidence of active Tbc. at left apex.
42	22	—	Normal.	R. larger than left.	1×2 cm. both sides.	—	8 months.	Good.	Smaller.	Pirquet +	—	Lungs normal.

Over 26 years of age.

43	29	Mother died pul. Tbc.	Imp. at R. base.	Enlarged.	Mass on both sides; incised on left.	Pirquet +	3 years.	—	Mass palpable on L., slightly enlarged on right.	—	—	—
44	27	None.	Normal.	Not enlarged.	2×3 cm. both sides.	Pirquet + Calmette +	2½ years.	Well for 2 years.	After 2 years caseous glands removed on R.	Pirquet +	Normal.	Lungs: Imp. at right apex; with râles.
45	31	"	"	L. larger than R.	None palpable.	—	2 years.	Good.	Not enlarged.	—	"	Lungs normal.
46	34	"	"	Slightly enlarged.	3×2 cm. both sides.		2 years.	Well for 1 year.	Palpable.	—	"	Lungs: definite pulmonary Tbc. developed after 2 years.

ciated with superficial ulcerations.[29] In these "apparently primary" tuberculous lesions of the tonsils, however, we have never seen a superficial lesion.

The tonsils were hypertrophied in 34 of our 46 cases. In nine, they were small, inconspicuous, and densely adherent to the anterior and posterior pillars. In 3 instances, the patients gave a history of a partial removal of their tonsils from one to five years previously.

In five cases in which a tuberculous lesion was found in only one tonsil, the tuberculous tonsil was definitely larger than the one on the opposite side. The increase in size of the tonsil in these cases was due to a hyperplasia of the mononuclear elements, and the germinal centers were unusually large and prominent.

[29] **Tubercle bacilli never produce a lesion that begins on the surface of mucous membranes, with the possible exception of lupus. In the secondary ulceration of the pharynx, in the larynx and intestines, the bacilli first penetrate to the submucous layer. The disease process may eventually cause ulceration of the overlying mucous membrane. This probably accounts for the characteristic undermining of tuberculous ulcers.**

The tuberculous focus in the tonsils was found most frequently near the capsular surface at the bottom of the crypts. In many instances, the tonsils and adenoids that contained a tuberculous focus were hyperplastic, and showed but little microscopical evidence of a chronic inflammatory process.

We have already emphasized the fact that the tuberculous lesion in the tonsils and adenoids in these cases was discovered during the routine histological examination. Many tuberculous lesions were probably missed. Our object, however, is not to determine the incidence of such lesions but to follow up the cases we have and note the ultimate outcome.

We shall not take up further time or space in summarizing these 46 cases, as they are all given in some detail in the following chart.

From the point of view of the operation, it is worthy of note that ether anæsthesia was used in every case. There were no immediate complications of any kind, and so far as we can determine no ill effects due to the operation have subsequently developed in any of the 46 patients. One patient had an attack of pleurisy nearly two years after the operation, and in others it was necessary subsequently to remove tuberculous

glands of the neck. There is no evidence, however, that the operation has in any case made the condition of the glands worse or caused a latent pulmonary lesion to become active.

It is also worthy of note that in every case the operative wound in the throat healed as readily as in the non-tuberculous patients. The hyperlastic pharyngitis noted in the subsequent examination of these cases is also present in a large percentage of all our tonsil cases, as may be seen by referring to the detailed tables of the other groups.

In each case a parent, or the family physician, was notified as soon as the tuberculous lesion in the tonsil or adenoid was discovered, and every effort was made to have the patients treated as though they were tuberculous. The Phipps Dispensary for the Treatment of Tuberculosis has co-operated, and in many instances of tuberculous cervical adenitis very striking results were obtained by tuberculin and general hygienic measures. We were also greatly aided by Dr. E. A. Park and others of the Harriet Lane Home for Invalid Children.

D. The Indications and Contra-Indications for Tonsillectomy.

Indications for Tonsillectomy.

I. *Local disorders in the upper air passages:*

1. Hyperplasia of the tonsils causing difficulty in swallowing, articulation or breathing. One should always bear in mind the possibility of a "status lymphaticus."

2. Frequent tonsillitis or quinsy. In these cases a careful examination must be made of the teeth, accessory nasal sinuses, nose and ears. Infection in any one of these situations may be primarily responsible for the frequent tonsil attacks.

3. A chronic laryngitis or bronchitis may often be benefited by a nose or throat operation.

4. A chronic catarrhal or suppurative otitis media or an Eustachian tube affection.

5. Chronic diphtheria carriers. Some of these cases will clear up after removal of the tonsils and adenoids. Often a pure culture of the Klebs-Löffler bacillus, virulent for guinea-pigs, may be obtained from the bottom of the crypts of the excised tonsils in cases that have no clinical manifestation of their presence.

6. Any of the various "reflex neuroses" in children; such as asthma, paroxysmal nocturnal attacks of coughing, enuresis nocturna, and sometimes convulsive seizures resembling petit mal. These are sometimes due to tonsillar or nasopharyngeal disease.

7. New growth. The carcinomas are best treated by operative measures. The sarcomas, however, usually respond promptly to radium treatment. We have, so far, had six cases of primary lympho-sarcoma of the tonsil or in the nasopharynx, with involvement of glands, that have remained well for two years or longer after radium treatment.

II. *For local trouble in the cervical glands draining the tonsils:*

1. Simple hyperplasia of the glands at the angle of the jaw. This condition is very common in children and young adults, and is an evidence of a chronic tonsil or nasopharyngeal infection.

2. Tuberculous cervical adenitis. We believe these cases are best treated by: (1) putting the nose and throat (the portals of entry for the tubercle bacilli) in normal condition; (2) removal or local incision and curettage of the caseating glands; (3) the judicious administration of tuberculin; and (4) general hygienic measures—with especial emphasis on the necessity of rest.

III. *For general systemic disorders secondary to a focus of infection in the tonsils:*

1. Infectious arthritis in which the periarticular changes predominate.

2. Myalgia or myositis.

3. The early stages of a glomerulo-nephritis.

4. The various nervous symptoms designated as "neurasthenia."

5. Occasionally, an iritis, refractive to all treatment, may be benefited by a tonsillectomy; but in these cases lues or tuberculosis should first be considered as an etiological factor.

6. The rare conditions, one example of which is given below, in which the chief symptoms are septic temperature; leucocytosis; general muscular and joint pains; general intoxication with negative findings on physical examination except for large, succulent tonsils.

Ludwig Beem.—Age 20. Med. No. 92223, Dr. L. F. Barker's service.

The patient was a sailor on a North German Lloyd boat that had been on the oriental service. He was admitted to The Johns Hopkins Hospital in November, 1913, complaining of chills and fever, and pains in all the joints and muscles. He had been confined to bed for a week before landing and could not walk nor move his arms or legs without great pain. There was no history of tonsillitis. The first symptom was a chill with a temperature of 105° F. The joints were slightly swollen but not red or hot. Leucocytes, 13,000.

The patient was under observation in the medical ward for six weeks. During this period, the temperature curve suggested malaria, except that the elevations occurred at very irregular intervals. No malarial organisms were found on repeated examinations, and a splenic puncture was negative. Blood cultures were always negative. The Wassermann of the blood and cerebrospinal fluid was negative. The administration of Salvarsan and a course of quinine had no appreciable effect on the temperature.

The tonsils were much enlarged, but with no evidence of an acute inflammation. There was a slight general glandular enlargement.

The tonsils and adenoids were removed, after which there was a cessation of the chills (*cf.* temperature chart), and a rapid disappearance of the pain in the joints and muscles. The patient was discharged about three weeks later, and returned to his boat. Nothing has been heard from him since leaving the hospital. Cultures from the tonsils[46] showed a pure culture of a hemolytic streptococcus.

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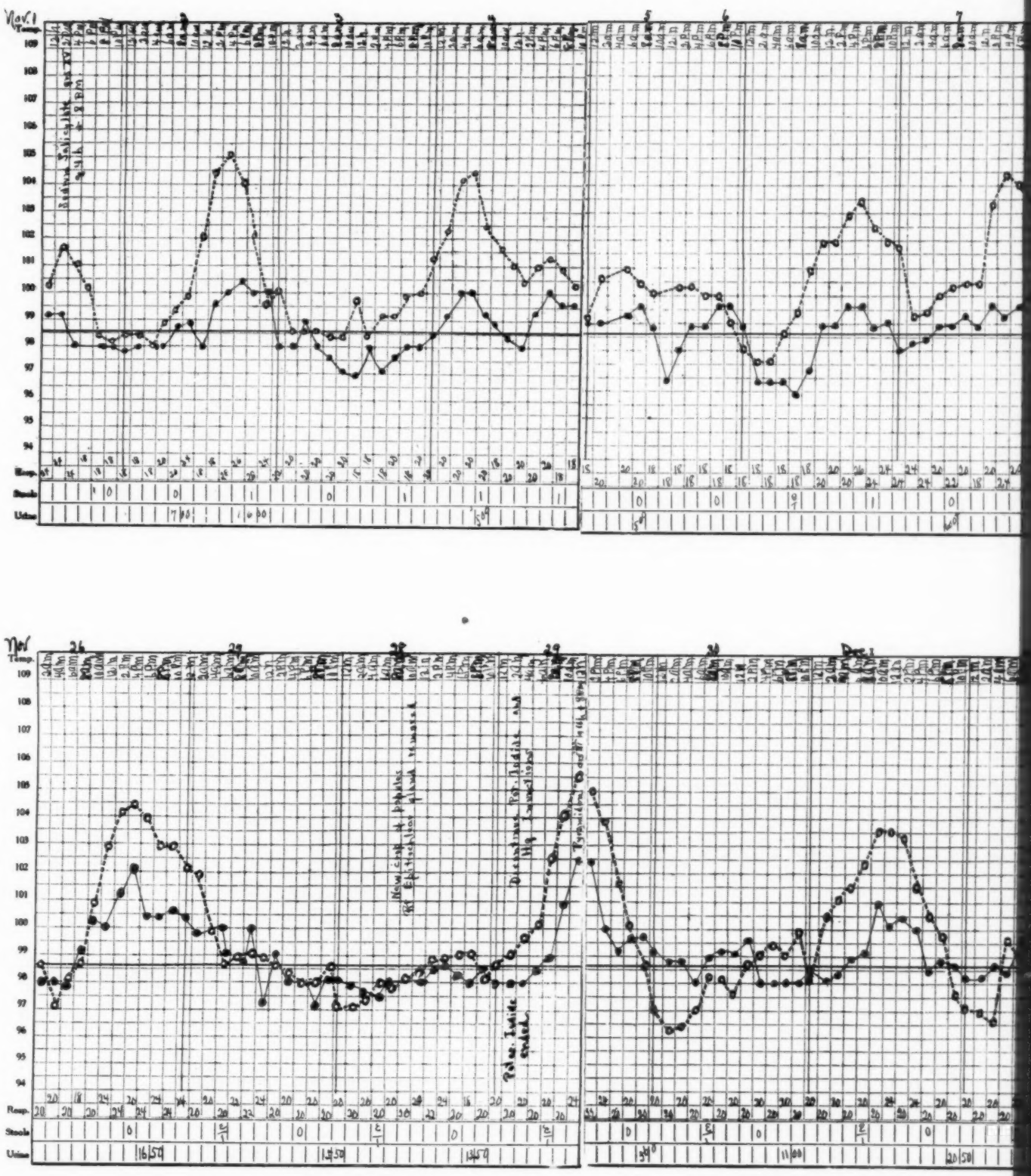
[46] Cultures from tonsils after excision are taken in the following way: The tonsil is removed with the capsule intact. A portion of the capsular surface is burned with a hot knife. A puncture is made through the burned area and culture taken by inserting the platinum loop through this opening into the parenchyma of the tonsil.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Temp.
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Dec. 1
Rubra Salicylate gr XV
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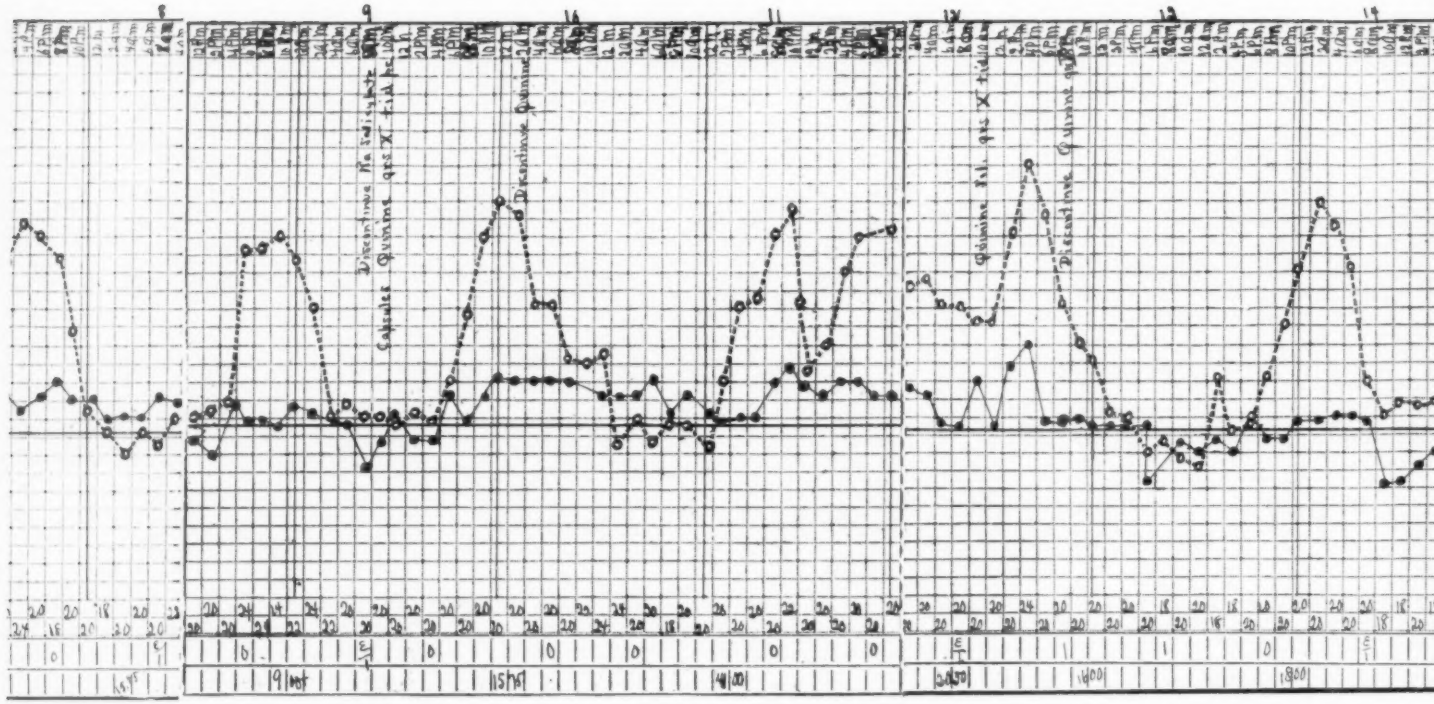
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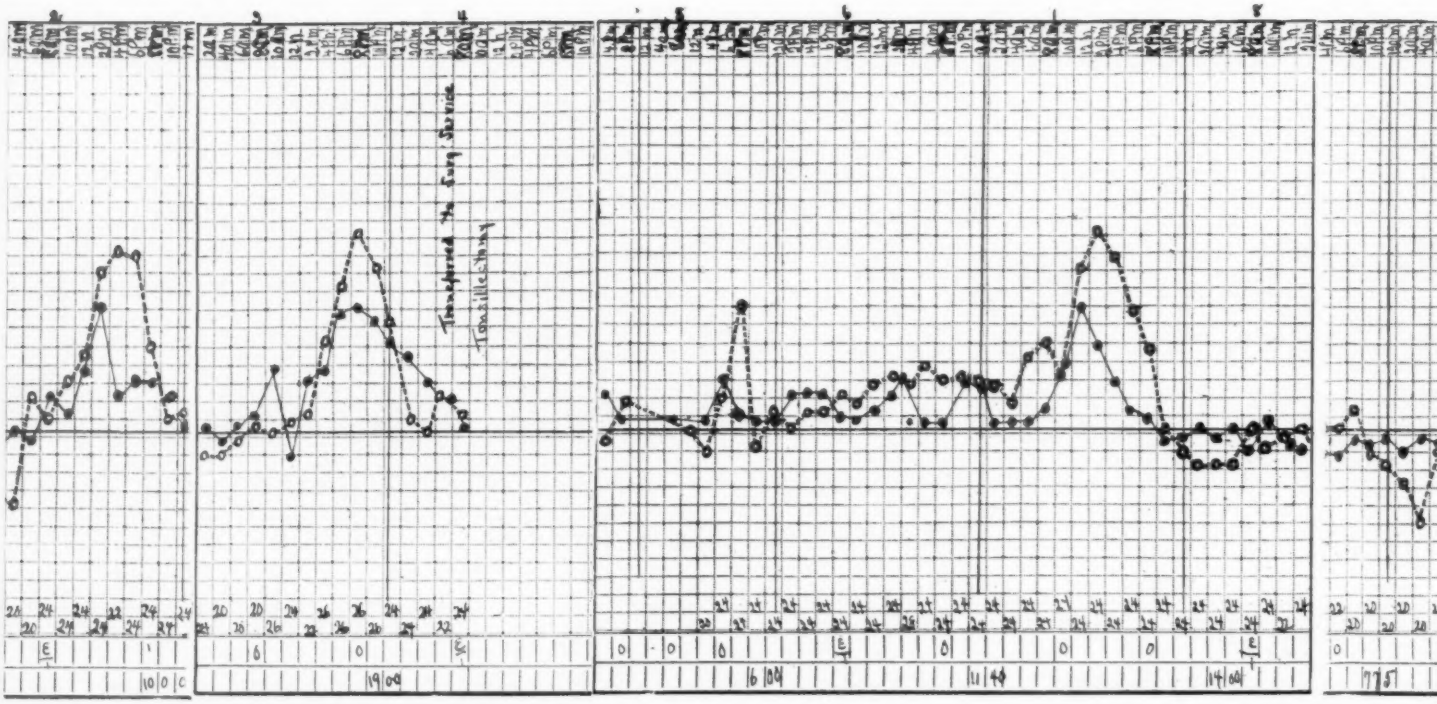
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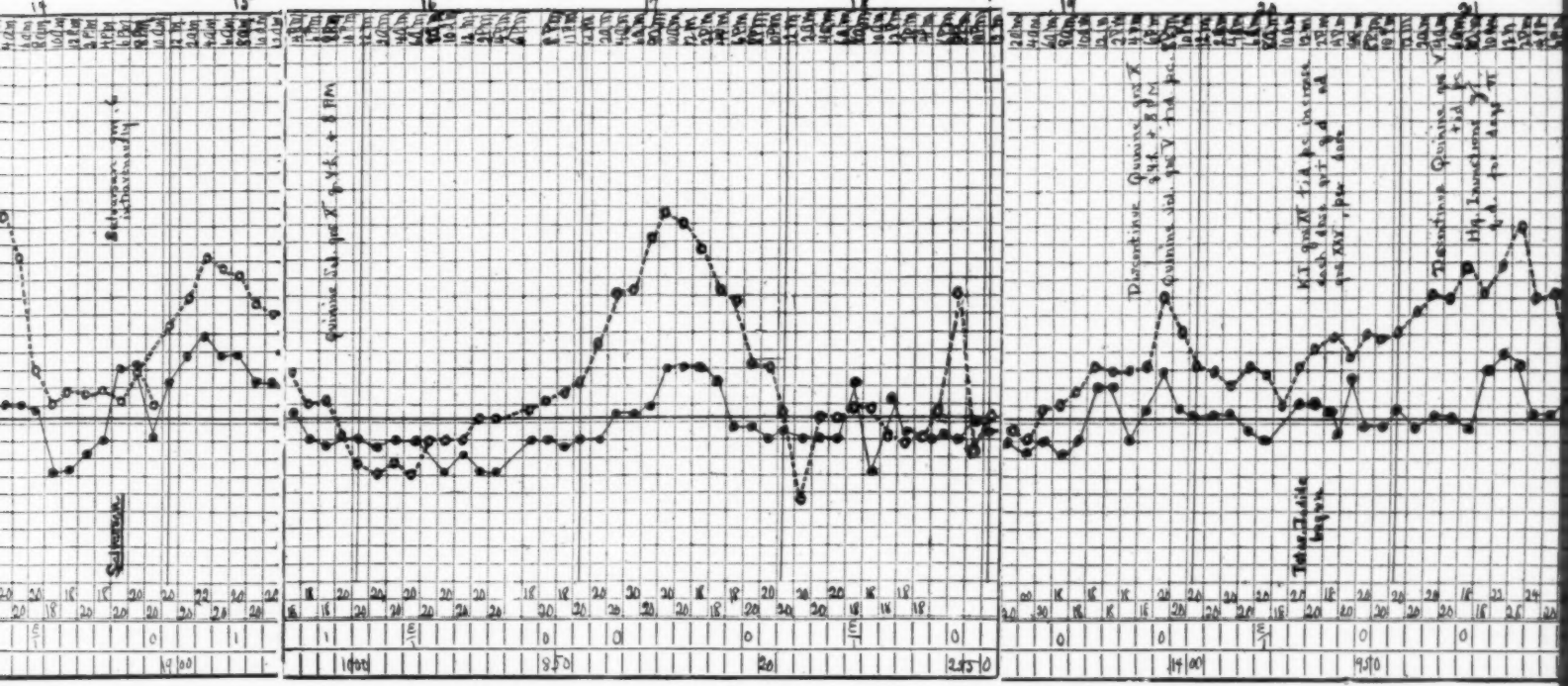
Tonsillectomy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Quinine sul. gtt V t.i.d. p.c.
Discontinue Quinine gtt X
Quinine sul. gtt V t.i.d. p.c.
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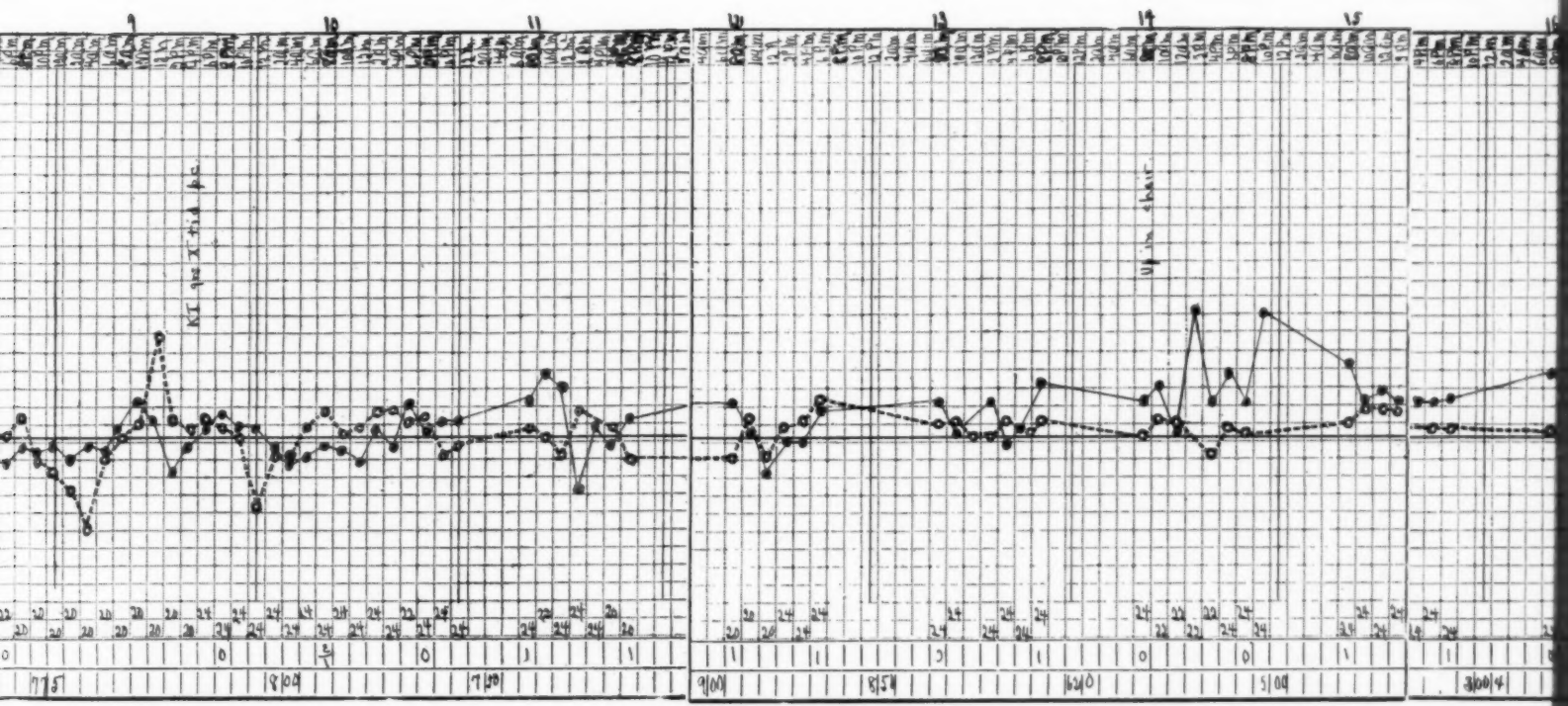
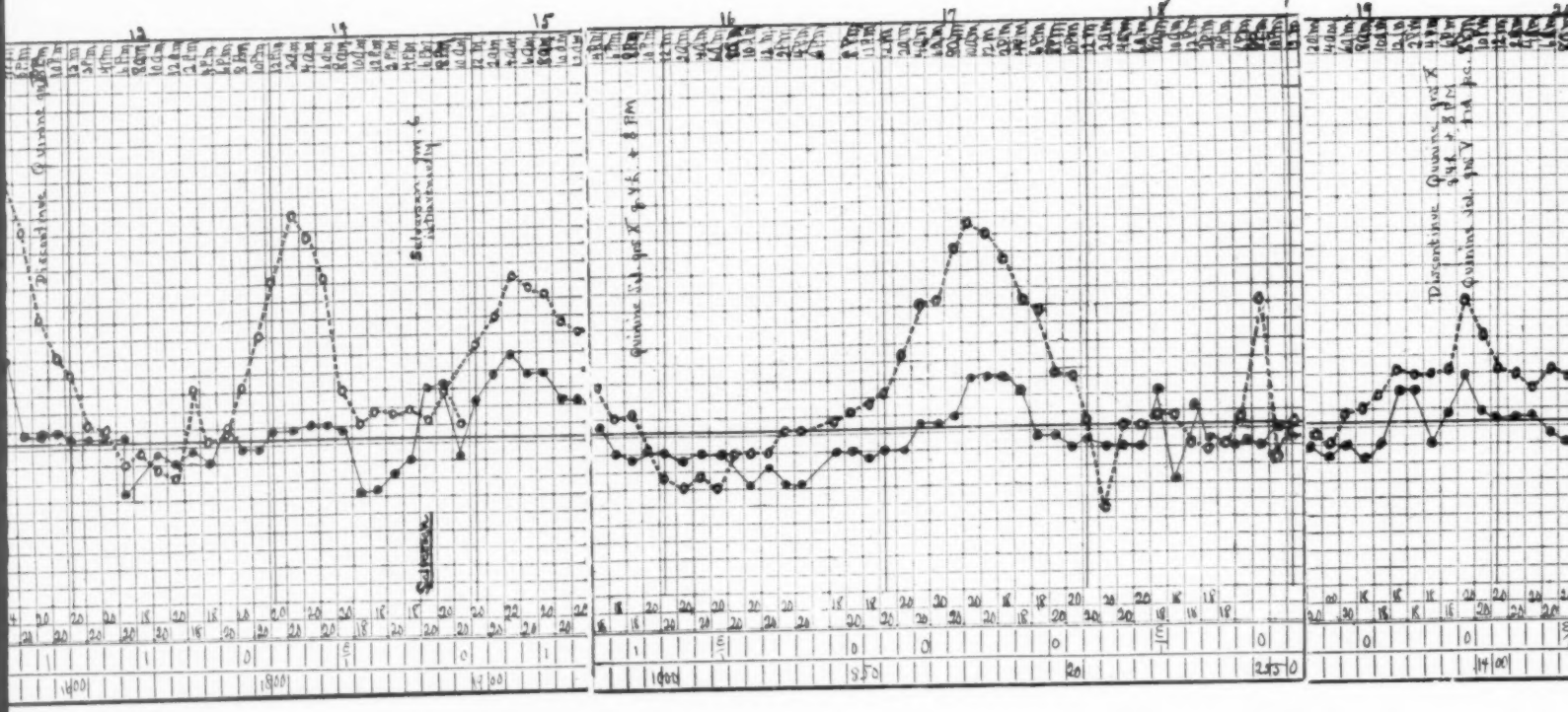
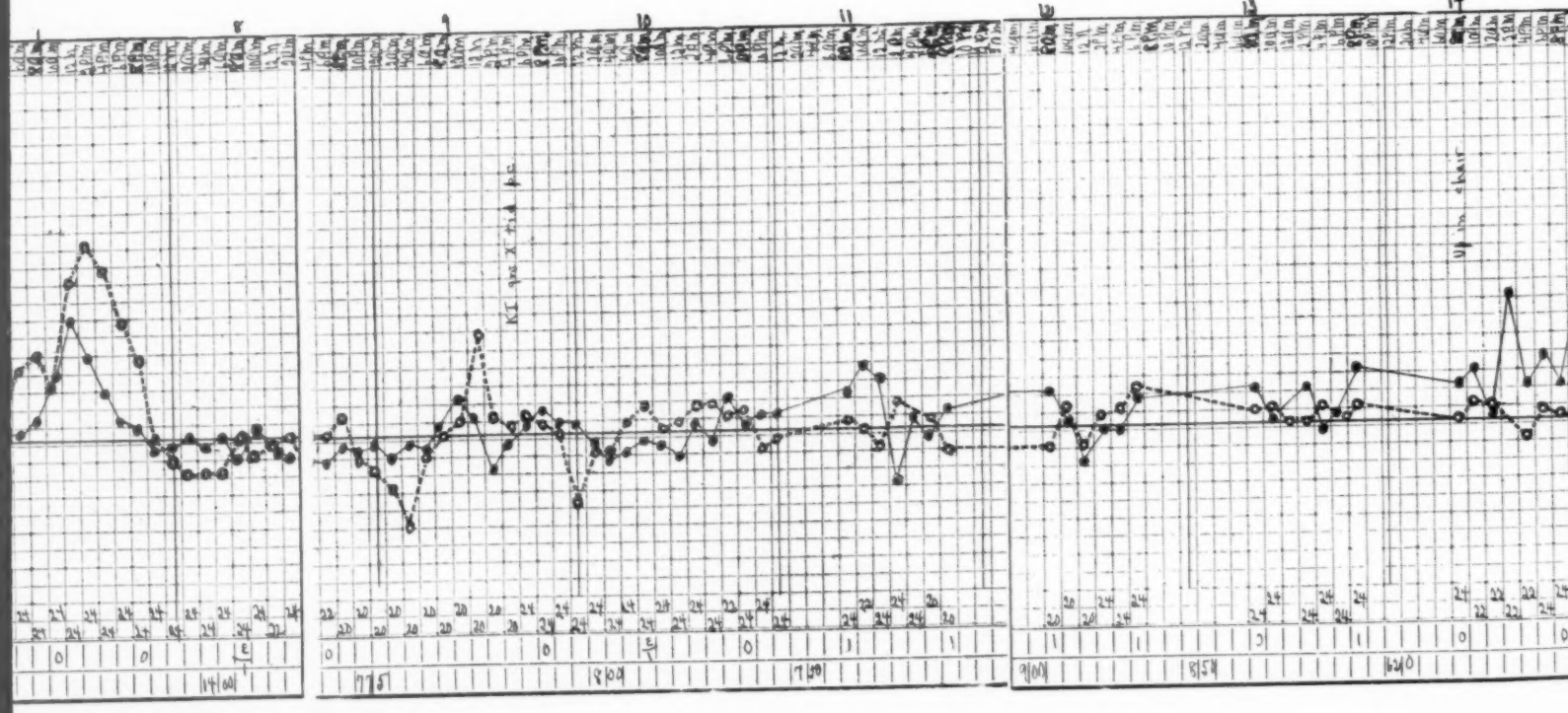
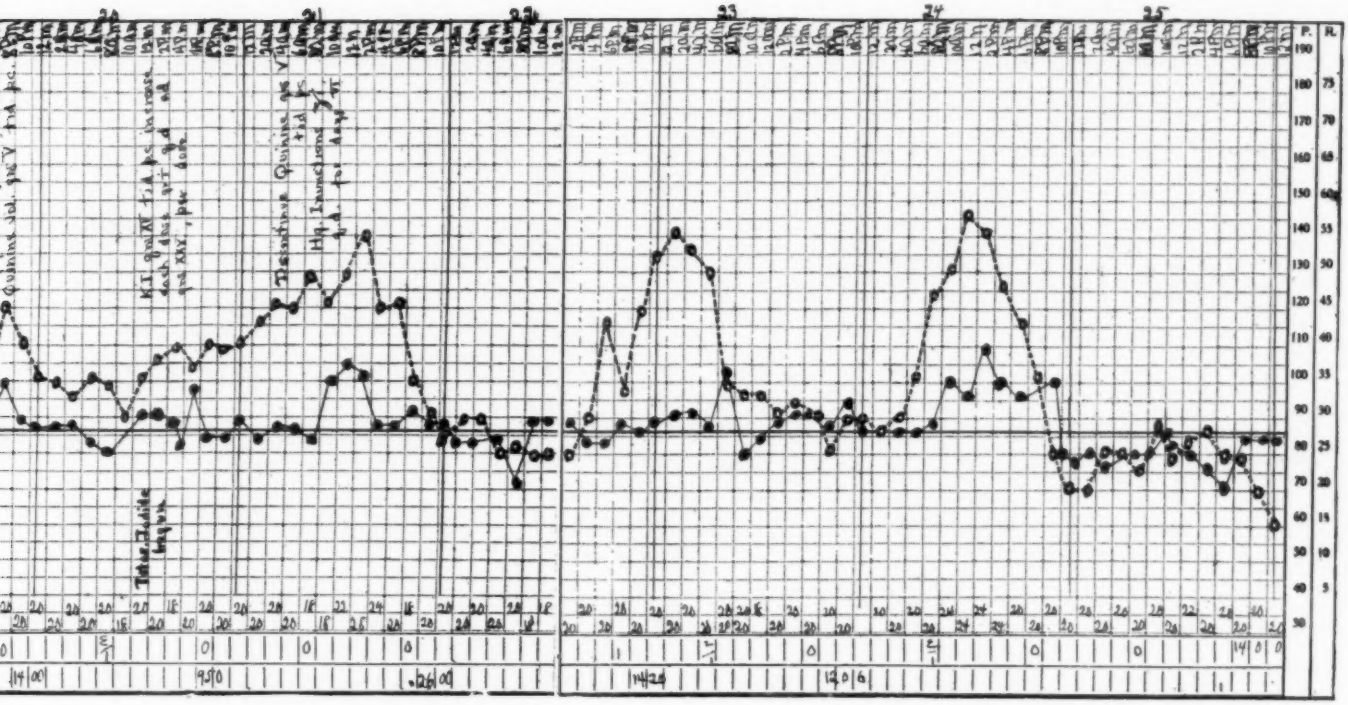
Tetracycline Hydrate
Tetracycline Quinine gtt V
KI gtt X t.i.d. p.c.


KI gtt X t.i.d. p.c.
Up in chair



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Tablets Quinine Sulph. gr V t.i.d. p.c.
Tablets Quinine Sulph. gr V t.i.d. p.c.
Hg. Iodide Inject.
Discharged

We have had two other cases in which the clinical symptoms, temperature curve, the negative findings on physical examination and the ultimate result of the tonsillectomy were identical with the above case.

IV. *As a prophylactic measure:*

1. In chorea, acute rheumatic fever and heart lesions, it is often advisable to remove the tonsils and adenoids in order to prevent further cardiac lesions that may result from an acute tonsillitis. The operation should never be undertaken, however, during the acute stage of the disease. There is nothing to be gained by such a procedure, and the consequences might be serious.

2. In the cases of chronic nephritis and arterio-sclerosis that give a history of repeated attacks of tonsillitis, a tonsillectomy, by preventing further acute attacks, may be of decided benefit to the patient.

The Contra-indications for Tonsillectomy:

1. A tonsillectomy should never be undertaken during the acute stage. It is best to wait at least three weeks after all symptoms have subsided. Several cases have been reported in which a cerebral (usually temporal lobe) abscess resulted from a tonsillectomy while the tonsils were inflamed. The symptoms (headache, choked disc, vomiting, etc.) first appear about three weeks after the operation.

2. Diabetes is a contra-indication for tonsillectomy as it is for any operation necessitating general anæsthesia.

3. A tonsillectomy is rarely of any benefit in the chronic deforming types of arthritis. The operation is quite severe, and in the majority of these cases, probably does more harm than good.

4. There is nothing to be gained from a tonsillectomy during the acute stage of chorea, acute rheumatic fever or endocarditis. Our experience has shown that even after the nose and throat have been put in normal condition by operative measures, chorea, rheumatic fever and endocarditis may recur. This would indicate that the tonsils are not the only portal of entry for the organisms causing these diseases.

5. As a general rule, the tonsils should not be removed in children up to fifteen years of age solely because they are enlarged or detritus is seen in the crypts. In all of these cases the adenoids are also enlarged and should be removed on account of the damage that may result from mouth-breathing and obstruction of the Eustachian tubes. It must be remembered that there is normally a hyperplasia of the tonsils and adenoids during childhood; also that the probable function of this lymphoid tissue is to protect the lower air passages, as has been fully discussed previously. Even frequent attacks of tonsillitis do not necessarily mean that the child's tonsils should be removed; often removal of adenoids, regulation of the digestive system, and general hygienic measures will prove sufficient.

6. A general anæsthetic should not be given in cases with an incipient or advanced pulmonary tuberculosis. If an operation is absolutely necessary, nitrous oxide is the anæsthetic of choice.

In cases with "latent" or "apparently arrested" tuberculous lesions, however, it is often advisable to operate on the nose and throat if the patient is subject to frequent coryza or angina attacks. The detrimental effects in these cases of acute infections of the respiratory tract (fully discussed in the preceding pages) seem to justify any operative procedure that will lessen the frequency of these acute attacks.

E. The Operation and the Post-Operative Complications of Tonsillectomy.

THE OPERATION.

A description of the technical procedure is unnecessary since all the essential steps are shown in the accompanying illustrations.

Ether is used in every case unless there is some definite contra-indication for the use of a general anæsthetic.

Every effort is made to keep the operative field dry. Control of hemorrhage in mouth and throat operations is of great importance. During one year eight cases of lung abscess following tonsillectomy were seen in one of the New York hospitals—all due to aspiration of blood-clots or pieces of tissue.[41]

The tonsils are removed by sharp incision. No snare or tonsillotome is used at any stage of the operation. All bleeding vessels are picked up with clamps, and at the end of the operation these bleeding points are ligated with fine black silk.

POST-OPERATIVE COMPLICATIONS OF TONSILLECTOMY.

The following tabulation includes all the post-operative complications in the 1000 tonsillectomies on which this report is based:

	Cases.
1. Fatalities	0
2. Bleeding after patient was sent to ward	38
(a) Severe[42]—requiring application of another ligature	12
(b) Slight	26
3. Post-operative bleeding from nasopharynx alone	8
4. Post-operative pneumonia	2
(Both of these patients were children; both recovered.)	
5. Acute otitis media	4
(Three of these patients were children.)	
6. Mastoiditis	0
7. Acute laryngitis	1
8. Acute bronchitis	2
9. Lung abscess	0
10. General septicæmia	0
(a) Endocarditis	0
(b) Metastatic abscess	0

[41] Manges, M.: Occurrence of Abscess of the lung after tonsillectomy; with a report of nine cases in adults; Amer. Jour. Surg., 1916; also Wessler, H.: Lung Suppuration after tonsillectomy; Interstate Med. Jour., 1916, XXIII, 5-9. (Supplement on Roentgenology.)

[42] The post-operative bleeding in these cases was almost invariably due to the slipping of a cat-gut ligature. This is liable to occur if there is much post-operative vomiting. For this reason we have discontinued the use of cat-gut for suture material, and for the past year have used fine black silk in all tonsil cases.

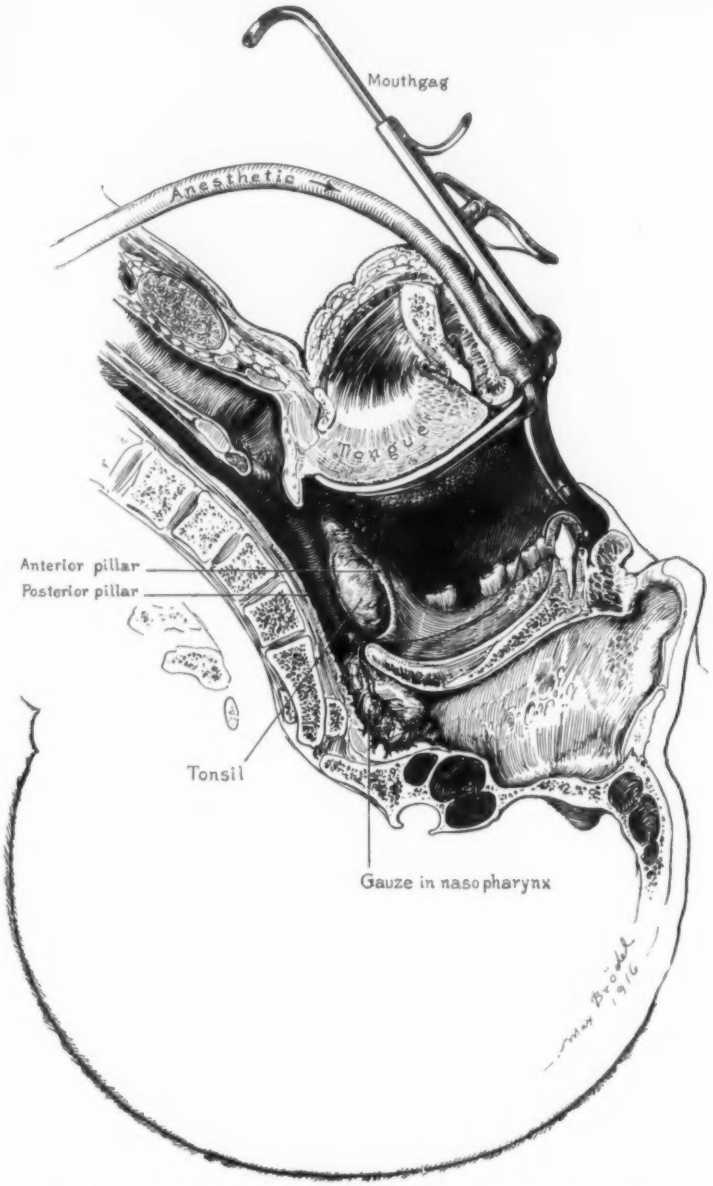


FIG. 9.—The patient is in the recumbent position. The foot of the table is slightly elevated. The gauze in the nasopharynx prevents saliva, vomitus or blood from entering the posterior nares or the Eustachian tubes. The operator stands at the end of the table. An electric head-light is worn by the operator. By placing the tongue depressor a little to the right or left of the median line of the tongue an excellent view of the operative field on that side is obtained.

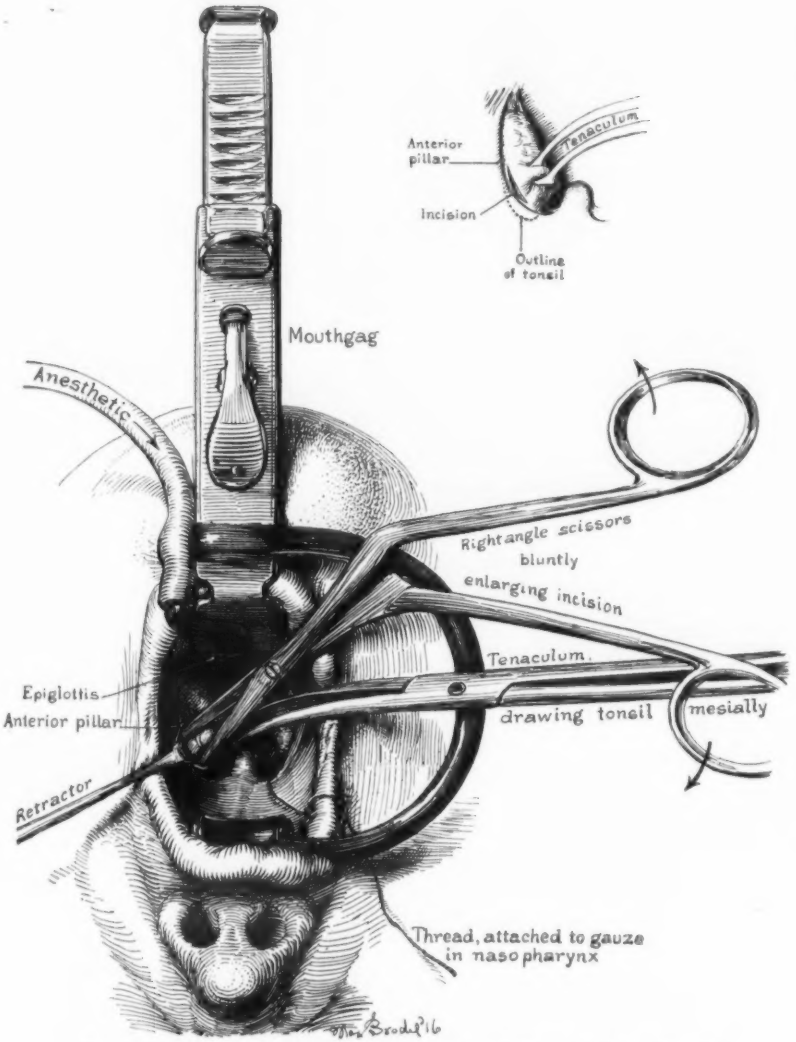


FIG. 10.—The upper pole of the tonsil is gently pulled toward the median line. An incision is then made through the mucous membrane just mesial to the anterior pillar (shown in insert). The incision is enlarged and retractor inserted as shown in large drawing.

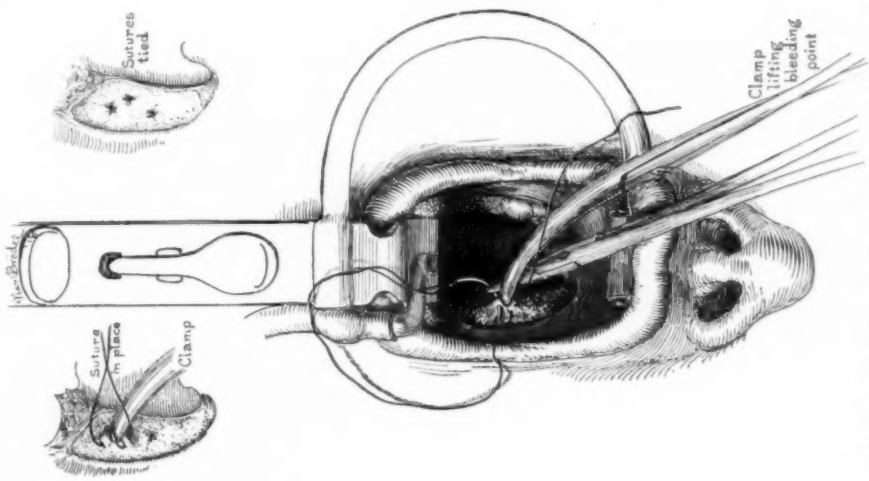


FIG. 13.—Shows the method of ligating the bleeding vessels. Note the small amount of tissue included in the clamp. The tissues are transfixed as superficially as possible, and the suture loosely tied. We have found that fine black silk is the best suture material. It is never necessary to remove the silk on a granulating surface. We have never seen a stitch abscess. Catgut may loosen if there is post-operative vomiting.

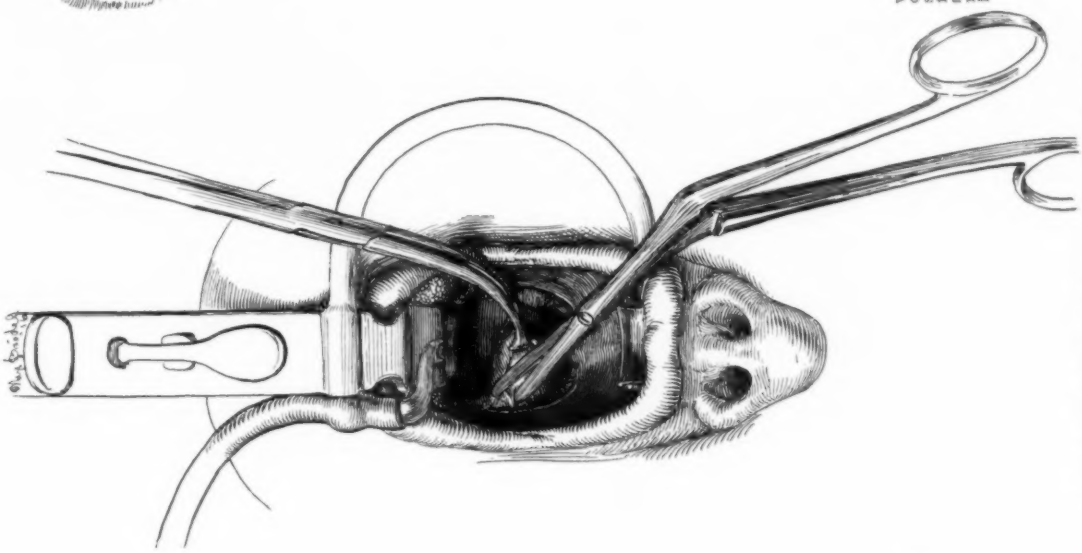


FIG. 11.—The tonsil is removed by sharp dissection. Scissors are more convenient than any form of knife. The dissection is made as close as possible to the capsule of the tonsil. The retractor is still in use at this stage of the operation, but for clearness is omitted in this drawing.

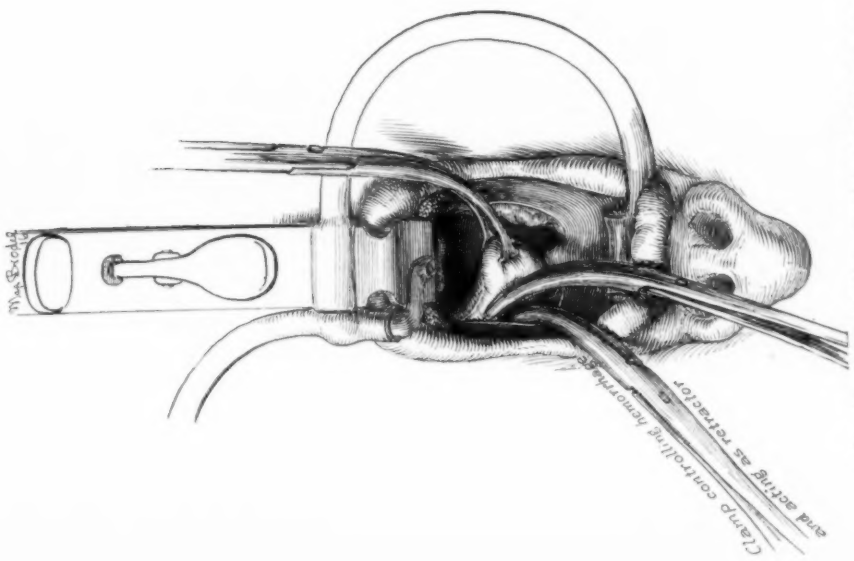


FIG. 12.—Every bleeding vessel is clamped as in any other surgical operation. This insures a dry operative field and lessens the danger of post-operative pulmonary complications.

11. Cellulitis of neck	0
(a) Suppurative cervical adenitis	2
12. Post-operative elevation of temperature[45] without physical signs; negative blood culture; gradually subsided in ten days	3
13. Tetany	1
14. Erysipelas	1
15. Infection accessory nasal sinuses:	
Antrum	1
Other sinuses	0

We ascribe the low percentage of ear and accessory nasal sinus infections to the protection afforded by the gauze pad that is always placed in the nasopharynx before the operation on the tonsil is begun (*cf.* Fig. 9). Also to the fact that after removal of the adenoids a gauze pad is held firmly in the nasopharynx for five minutes. This usually avoids the formation of a large blood-clot.

Koplik,[46] in 1912, described three forms of infections that he has observed after tonsil operations:

1. Elevation of temperature that begins on the second or third day after operation. Nothing is found in the ears, throat, cervical glands or lungs on physical examination. The temperature gradually subsides after two weeks or more without evident endocardial lesion.

2. Reports a case with an old endocardial lesion and mild chorea that was operated on while the chorea was still active. Three days later the child had a chill followed by an exacerbation of the chorea and endocarditis. Died two weeks later.

3. Severe hematogenous infection with destructive blood changes, ecchymotic areas under the skin and throughout the intestinal tract.

Wessler[47] in 1916 reports eight cases from the medical clinic of the Mt. Sinai Hospital with a lung abscess following tonsillectomy. All of these patients were operated on at one of the nose and throat hospitals in New York and were subsequently admitted to the Mt. Sinai Hospital on account of the pulmonary symptoms.

1. Most of the patients were adults:
   1 was 10 years of age.
   1 was 18 years of age.
   6 were from 22 to 40 years of age.

2. The onset of the pulmonary symptoms varied from one to ten days.

3. The onset of the signs of pulmonary suppuration in the majority of the cases varied from one to two weeks after operation.

4. There was a leucocytosis of from 12,000 to 26,000 in seven of the cases.

5. Symptoms:

(a) Evidence of bronchopneumonia.

(b) Evidence of suppuration with chills, fever, purulent or gangrenous sputum.

(c) Hemoptysis is a constant symptom.

(d) Pain is frequently complained of, and is due to the associated pleurisy.

(e) Patients are not acutely ill; they may have chills followed by a remission of the temperature, during which period they appear entirely well, with the exception of a cough and a foul smelling sputum.

6. Physical signs:

(a) The lesion is usually deep-seated and aside from pleurisy there may be no signs.

(b) The X-ray plate shows an area of infiltration—sometimes lobar. Very rarely can a cavity be seen.

7. Localization of lung abscess:

(a) Abscess right upper lobe, 4 cases.

(b) Abscess right lower lobe, 1 case.

(c) Abscess right middle lobe, 1 case.

(d) Abscess left lower lobe, 2 cases.

8. Ultimate result:

(a) Of the eight cases six recovered without operative measures in from six weeks to five months.

(b) One recovered after removal of the affected lobe of lung.

(c) One patient is not improved.

I. Arthritis Group.

Our object in following these cases of arthritis was to determine, if possible, the types of joint lesions in which improvement may be expected after the removal of infected tonsils and adenoids.[48]

We have not attempted to follow any definite classification of the joint lesions, but have divided them into four general groups.

1. *Infectious Arthritis.*—In these cases the predominating change is in the periarticular tissues, often with an effusion into the joint cavity. The onset is usually insidious, or may come on two or three weeks after an attack of acute tonsillitis. Only one joint may be involved, but in the majority of cases many of the joints are affected. There is very little, if any, elevation of temperature, and generally no redness around the affected joints. The joints are swollen and often extremely painful on motion. There is no associated endocarditis.

[45] Refer to article by H. Koplik: Infections Following Tonsillectomy, with a Consideration of the Forms of Such Infections; Am. J. Med. Sciences, 1912, CXLIV, 30-36.

[46] Koplik: *Loc. cit.*

[47] Wessler H.: *Loc. cit.*

[48] We have had a still larger group of arthritis cases in which the focus of infection was in one of the accessory nasal sinuses. In all cases included in this report the only focus of infection found in the upper air passages was in the tonsils or adenoids. We hope to present the others in a subsequent communication.

2. *Myalgia.*—These cases are characterized by pain, stiffness and impairment of function of the muscles. There is no joint lesion.

3. *So-called "Rheumatoid Arthritis."*—The so-called "rheumatoid arthritis" is the most malign form of joint disease. Many joints are involved as a rule and often the spine. The process is progressive and tends to ankylosis of many of the joints. There is no associated endocarditis.

4. *Acute Rheumatic Fever.*—Polyarthritis; sudden onset; temperature 102° to 104° F.; often heart lesion, either endocarditis, pericarditis or myocarditis. The joints tend to clear up as the general symptoms subside, but the cardiac lesion is permanent in many cases. Our object in operating on the nose and throat in these cases is not primarily on account of the joint condition but to try and prevent a recurrence of either arthritis or endocarditis.

1. *Infectious Arthritis.*—During the past four years we have removed the tonsils and adenoids in 91 cases with an infectious type of arthritis. Of this number we have been able to follow up and note the ultimate result of the joint condition in 31. These 31 cases are given in detail in Table No. II. In 24 the joints were normal, both subjectively and objectively, at the time of the last examination. In some, the affected joints were much worse for a few days immediately following the tonsillectomy, but began to improve after two or three weeks. Often it was six or eight months before all joints symptoms entirely disappeared.

Four cases are classified as improved because the patients are now able to walk without pain. The affected joints, however, have never entirely cleared up, and since the tonsillectomy have at times been much worse.

Two are not improved, and one is in worse condition than at the time of the operation. One of these (Surg. No. 34,893) has a chronic ethmoiditis, but refuses further operative measures. It is possible that the arthritis in this case belongs in the group designated "rheumatoid arthritis."

2. *Myalgia.*—We use the term "myalgia" in speaking of these cases because there is no conclusive evidence of a myositis or an actual inflammatory process in the involved muscles. There is stiffness, tenderness, pain on motion, and sometimes a continuous throbbing pain in the affected muscles.

We have been able to obtain subsequent examinations in four cases. The indication for tonsillectomy in each of these cases was myalgia. Two patients were examined two years after the tonsillectomy, and two one year after the tonsillectomy; in all four cases the trouble had entirely disappeared. It might, of course, have cleared up, for all we know, if no operation had been performed.

These cases are given in detail in Table No. III.

3. *So-called "Rheumatoid Arthritis."*—In this group we have been able to follow up nine cases, but the lesson to be learned from these few cases is clear.

Only two of the nine cases are improved. This improvement might be due as much to the general hygienic measures they have followed as to the tonsil operation. Two are not improved, but no new joints have been become involved. Five of the nine cases are much worse. New joints have become involved, and they are, for the most part, helpless invalids.

The conclusion drawn from this group of cases is that only in very exceptional circumstances should anyone subject a patient with "rheumatoid arthritis" to an operation for the removal of the tonsils. Even in the cases that give a history of repeated attacks of tonsillitis for many years past, as in Surg. No. 35026, it is doubtful whether it is justifiable to subject them to an operation.

Patients in this group are for the most part middle-aged people. Their disease is usually well advanced when they seek medical advice. There is often a marked anæmia, and a distinct lessening of their ability to withstand pain. A tonsillectomy is one of the most trying of all surgical procedures. This is particularly true if an ether anæsthesia is used, but doubly so under local anæsthesia. On account of the danger of post-operative bleeding and the physical and mental stress of an operation under local anæsthesia we have always employed ether.

In each of these nine cases of "rheumatoid arthritis" it seemed to us and to our advisers on the Medical and Orthopedic Staffs, that the tonsil was a source of infection, and that the patient should have the benefit of the doubt. The operation was most carefully done and every effort made to prevent loss of blood, post-operative vomiting, etc. In several instances, however, it required a stay of from six weeks to three months in the hospital in order to regain the physical level on which they were at the time the tonsillectomy was performed.

These nine cases are given in detail in Table No. IV.

4. *Acute Rheumatic Fever.*—One of the characteristic features of true rheumatic fever is the frequent recurrence of the arthritic and cardiac symptoms. As a rule, the joints will clear up after each attack, but the damage to the heart is often permanent.

Removal of the tonsils and adenoids in cases of rheumatic fever eliminates one of the portals of infection and is supposed materially to lessen the frequency of the recurrences. The following chart, which is a summary of the more detailed Table No. V shows the frequency of the recurrence of acute attacks of rheumatic fever with polyarthritis in cases that have had the nose and throat put in normal condition by operative measures.

It is quite evident that the tonsils are not the only portal of entry for the organisms that cause rheumatic fever. Four of these twenty-five cases have had a recurrence after leaving the hospital; one patient was perfectly well for two years after the removal of his tonsils and then had a characteristic attack of rheumatic fever.

We have found the same tendency to recurrence in the chorea cases that have had the nose and throat put in normal condition.

SUMMARY OF 25 CASES OF RHEUMATIC FEVER WITH ESPECIAL REFERENCE TO THE RECURRENCE AFTER TONSILLECTOMY.

No. Case	Type of heart lesion.	Time observed after tonsillectomy.	Recurrence of rheumatic fever.	Condition of joints at last examination.
1	Mitral insufficiency.	3 years.	None.	Normal.
2	" "	6 months.	"	"
3	" "	1 year.	"	"
4	" "	1½ years.	"	"
5	" "	1⅔ years.	"	"
6	Aortic " Mitral " Cardiac Arhythmia.	3¾ years.	Has had 2 attacks 2 years after operation. Another 3 years after operation.	Joints normal at present time.
7	None.	3½ years.	None.	Normal.
8	Mitral insufficiency.	3 years.	"	"
9	Pericarditis. Mitral insufficiency.	3 years.	On 2 occasions since operation.	Joints normal at present time.
10	" "	2½ years.	None.	Normal.
11	—	3 years.	"	"
12	Mitral insufficiency. " stenosis. Tachycardia.	2½ years.	"	"
13	Pericarditis. Aortic insufficiency. Mitral "	2 years.	"	Joints still stiff and painful.
14	None.	1½ years.	"	Normal.
15	Pericarditis. Mitral insufficiency.	1¾ years.	"	"
16	None.	14 months.	"	"
17	Mitral insufficiency.	1 year.	"	"
18	" "	9 months.	"	"
19	" "	9 months.	"	Joints have not improved.
20	Aortic " Mitral "	1½ years.	"	Normal.
21	Pericarditis. Myocarditis.	2 years.	3 weeks after tonsillectomy.	Joints normal for past 1½ years.
22	None.	3½ years.	None.	Normal.
23	Mitral insufficiency.	6 months.	5 months after operation.	Joints normal.
24	" "	1 year.	None.	Normal.
25	" "	1½ years.	"	"

II. Chorea.

It is quite evident from our results that removal of the tonsils and adenoids is not a very satisfactory therapeutic or prophylactic measure in chorea. In each of these 24 cases the greatest care was taken to remedy all abnormal conditions in the nose, throat, ears and teeth. In no case was there any post-operative complication, but the ultimate result as regards the recurrence of chorea is far from satisfactory. Two cases died during the year following the tonsillectomy with acute chorea; in one, the symptoms of chorea are still present, nearly three years after the operation; in one the chorea is worse than at the time of the operation, one and one-half years ago. One case that had no symptoms of chorea before the operation has had two attacks of chorea since the tonsillectomy, one and one-third years ago.

Of the 23 cases of Sydenham's chorea in which the tonsils and adenoids were removed, eight have had a recurrence. Two of these patients have had two recurrences each, and one has had five separate attacks of chorea since the operation. We shall make every effort to follow up the 13 patients that have as yet had no recurrence of chorea in order to determine the ultimate result.

It is not an uncommon practice for internists and laryngologists to advise a tonsillectomy during the acute stage of chorea, but it is undoubtedly a dangerous procedure, and in view of our results is an entirely unjustifiable risk. A tonsillectomy when the chorea is quiescent may be advisable, but it should be done with the idea of preventing damage to the heart or joints rather than as a curative measure for the chorea.

The following chart, which is a summary of the more detailed notes in Table No. VI, is prepared in order to emphasize the frequency of cardiac and joint lesions in chorea; to show the length of time we have observed these cases after operation; and to illustrate the ultimate results as regards recurrence of choreic symptoms.

SUMMARY OF 24 CASES OF CHOREA WITH PARTICULAR REFERENCE TO RECURRENCE AFTER REMOVAL OF TONSILS AND ADENOIDS.

No. Case.	Age.	Heart lesion.	Arthritis.	Time observed after tonsillectomy.	Recurrence of chorea.
1	5	Mitral insufficiency.	None.	Chorea disappeared for 14 months; then had acute chorea; multiple arthritis; dilated heart; death.	Fatal attack 14 months after tonsillectomy.
2	5	None.	Multiple arthritis.	8 months.	None.
3	4	"	None.	1½ years.	"
4	3	"	"	2 years.	"
5	9	"	"	1⅔ years.	Fatal attack 20 months after tonsillectomy.
6	7	"	"	2¾ years.	Chorea has never entirely disappeared.
7	7	Mitral insufficiency.	Acute rheumatic fever, 2 attacks. (No recurrence.)	1½ years.	None.
8	8	None.	None.	2¾ years.	"
9	9	Mitral insufficiency.	Acute rheumatic fever, 1 attack. (No recurrence.)	2 years.	1st recurrence 3 months after tonsillectomy. 2d recurrence 1 year later.
10	10	" "	Yes?	1¾ years.	None.
11	10	" "	None.	14 months.	1st recurrence 3 months after tonsillectomy. 2d acute chorea and endocarditis 6 mos. later.
12	10	None.	"	1 year.	None.
13	9	"	"	1 year.	11 months after tonsillectomy, chorea with palsy in left arm and leg.
14	12	Mitral insufficiency. Pericarditis.	Multiple arthritis.	1½ years.	Died with recurrence of rheumatic fever.
15	11	Mitral insufficiency. " stenosis.	Multiple arthritis. (No recurrence.)	2¾ years.	Symptoms of chorea have never disappeared.
16	15	Mitral insufficiency.	Acute rheumatic fever. Some joints still involved.	3 years.	None.
17	15	None.	None.	2¾ years.	"
18	11	Mitral insufficiency.	"	1½ years.	"
19	14	None.	"	1½ years.	Chorea worse than at time of tonsillectomy.
20	13	"	Yes. Has cleared up.	1½ years.	None.
21	15	Mitral insufficiency.	None.	1½ years.	"
22	8	" "	Acute rheumatic fever. (No recurrence.)	3¼ years.	"
23	12	None.	None.	2½ years.	Has had 5 attacks of chorea since tonsillectomy.
24	10	Mitral insufficiency. Pericarditis.	Acute rheumatic fever, 2 attacks. (No recurrence.)	1½ years.	No chorea before operation; 2 attacks since.

III. Nephritis.

According to Baehr,[47] Ophüls[48] and others, there is a type of renal lesion, not infrequently found at autopsy, in which the damage is primarily in the glomerular tufts of vessels. This condition is designated as a glomerulo-nephritis. It is believed to be due to a septic infection, usually with streptococci.

Baehr, who studied the kidneys in 25 cases of bacterial (streptococcus viridans) endocarditis, found on microscopical examination, glomerular lesions in 23 cases, and gave a very complete description of the process. An essential part of the pathological picture is the absence of any apparent changes in the uninvolved glomeruli. The tubules in intimate relation to the diseased glomeruli undergo a marked atrophy. They finally appear as strands of very cellular fibrous tissue surrounded with an infiltration of round cells.

The initial glomerular changes are ascribed to the occlusion of the glomerular capillaries with bacterial thrombi, and the tubular changes to an "inactivity atrophy." If the glomerular lesions are very widespread, the kidney will eventually present much the same appearance as the usual secondary contracted kidney.

Hematuria is one of the most characteristic features of the disease. Histologically, there are inflammatory changes in and about the affected glomeruli; edema of the interstitial tissues; degenerative changes in the glomerular and tubular epithelium; blood, leucocytes and casts in the tubules.

The etiology of the majority of cases is very evident in the comparatively recent history of tonsillitis, arthritis, acute rheumatic fever, or some other form of a general streptococcus infection with or without endocarditis.

Ophüls describes three stages of glomerulo-nephritis. The acute stage is characterized by symptoms of an overwhelming infection, and in the fatal cases, the renal lesion plays but a minor role in the symptom-complex. In the sub-acute cases, there is a gradual rise of blood-pressure to 180 or 200. There may be marked anæmia. Occasionally the edema is marked. In both acute and sub-acute cases, diplo-streptococci may often be found in the urine. As the disease passes into the chronic stage, the affected glomeruli become more and more fibrous, and are eventually transformed into small solid nodules of hyaline connective tissue. There is an extreme degree of endarteritis of both the small and large arteries of the kidneys. The blood-pressure is elevated. The heart is usually enlarged. The urine continues to show albumin, casts, red blood corpuscles and leucocytes. The phenolphthalein excretion is considerably diminished. Uræmia occurred in 11 of the 17 cases of Ophüls.

Baehr has been able to demonstrate streptococci in the capillaries of the affected glomeruli in five of his more acute cases. The urine was not examined for organisms in any of our cases. In the chronic stage of the disease, bacteria are never found; they are apparently destroyed during the earlier stages, perhaps due to tissue and vascular changes unfavorable to their growth.

The following chart, which is a summary of the more detailed account given in Table No. VII, is prepared to show the frequency of the history of tonsillitis; the association of cardiac and joint lesions in these cases; the length of time observed after tonsillectomy; and the condition of the urine at the time of our last examination.

SUMMARY OF 18 CASES OF NEPHRITIS IN WHICH THE TONSILS WERE REMOVED AS A THERAPEUTIC MEASURE.

No. Case.	Age.	History of tonsillitis.	Heart lesion.	Arthritis.	Time observed after tonsillectomy.	Condition of urine at last examination.
1	8	Yes.	Mitral insufficiency.	Tbc. arthritis, left heel.	3 years.	Died, acute nephritis.
2	6	"	None.	None.	26 months.	Normal.
3	10	"	"	Multiple arthritis.	16 months.	"
4	12	"	"	None.	2½ years.	"
5	16	"	"	"	2½ years.	Tr. albumin; no casts or r. b. c.
6	16	"	"	"	10 months.	Normal.
7	17	None.	"	"	8 months.	"
8	12	Yes.	Mitral insufficiency. History chorea.	"	14 months.	Normal. No recurrence chorea.
9	19	"	None.	"	7 months.	Still few r. b. c.
10	47	"	"	History; two attacks acute rheumatic fever; multiple arthritis.	3½ years.	Normal.
11	25	None.	"	None.	2½ years.	Tr. albumin; no casts, w. b. c. nor r. b. c.
12	21	Yes.	"	"	8 months.	Normal.
13	36	"	Mitral insufficiency.	"	2 years.	Died pneumonia. Autopsy showed chronic diffuse nephritis.
14	30	"	None.	"	1½ years.	Normal.
15	21	"	"	"	1 year.	"
16	29	"	"	Multiple arthritis.	10 months.	"
17	26	"	History chorea. None.	Multiple arthritis.	1 year.	"
18	16	"	Mitral insufficiency.	None.	3½ years.	"

IV. Hyperplasia of the Cervical Glands.

A chronic enlargement of the deep cervical glands at the angle of the jaw, together with the past history of the patient, was the indication for tonsillectomy in 541 of the 1000 cases we are reporting. In each of these patients the enlarged glands on admission varied in size from that of a lima bean to that of a walnut. The relation of these enlarged glands at the angle of the mandible to the age of the patient is given below.

From	1	to	3	years	of	age	24 cases.
"	3	"	5	"	"	"	46 "
"	5	"	7	"	"	"	80 "
"	7	"	10	"	"	"	128 "
"	10	"	12	"	"	"	59 "
"	12	"	14	"	"	"	38 "
"	14	"	16	"	"	"	36 "
"	16	"	20	"	"	"	55 "
"	20	"	25	"	"	"	41 "
"	25	"	30	"	"	"	18 "
"	30	"	40	"	"	"	13 "
"	40	"	50	"	"	"	1 "
"	50	"	60	"	"	"	2 "
			Total				541 "

[47] Baehr: Glomerular Lesions of Subacute Bacterial Endocarditis; Jour. Exper. Med., 1912, XV, 330-347.

[48] Ophüls, W.: Nephritis (With a Review of Recent Literature); Jour. Am. Med. Assn., 1915, LXV, 1719-1725.

Of these 541 cases we have been able to follow up and examine, with particular reference to the glands, 366 patients at periods varying from six months to four years after tonsillectomy.

I. Of these 366 cases, 19 now have tuberculous lesions, though they showed no clinical evidence of a tuberculous infection of the lungs or glands at the time of operation.

Six patients now have pulmonary tuberculosis.

Thirteen patients now have tuberculous cervical adenitis.

II. At the time of tonsillectomy 93 of these 541 patients had some clinical evidence of a tuberculous adenitis or of a quiescent pulmonary lesion. Of these 93 cases we have examined 54 since their discharge from the hospital.

8 of these 54 have developed pulmonary tuberculosis.

8 of these 54 have tuberculous glands of the neck.

1 died of tuberculous meningitis one year after operation.

1 has developed tuberculosis of the bones.

III. The improvement in the condition of the glands as a result of the tonsillectomy is indicated by the following:

In 122 of the 366 cases there are no palpable glands in the anterior triangles.

In 187 of the 366 cases the glands in the anterior triangles are not larger than peas.

In 36 of the 366 cases the glands are still enlarged.

In 21 of the 366 cases the glands are definitely tuberculous.

In Table No. VIII, we give in some detail the clinical history of 142 of these 366 patients. The size and situation of enlarged cervical glands at the time of the tonsillectomy is noted; the length of time the patient has been observed, and the ultimate result of the tonsillectomy as regards the enlarged glands. The 142 cases in this chart include some of the patients from each of the three groups mentioned above.

A chronic enlargement of the deep cervical glands near the angle of the jaw is such a frequent occurrence between the ages of five and 20 years that the parents, and for the most part the physicians, disregard them entirely.

Enlargement of the cervical glands due to an acute angina will usually subside within a month or six weeks, provided there is no chronic focus of infection in the area drained by these glands. Acute lymphadenitis is characterized, among other things, by tenderness of the infected glands on palpation. In the majority of children, especially among the class of patients that apply for treatment in the out-patient department, the glands at the angle of the jaw are the size of the end of the index finger or thumb; hard, not tender on palpation, and freely movable. Such a condition we have always regarded as a positive indication for removal of the tonsils and adenoids, provided there is no chronic infection of the accessory nasal sinuses, ears or scalp.

Our experience has shown that the tonsils are the most common site of the chronic infections that give rise to a hyperplasia of the deep cervical glands near the angle of the jaw. In a large number of cases, we have had the carious teeth and alveolar abscesses alone treated, and observed the patients for a period of six months or more. The enlarged glands will rarely subside after such treatment, and we have concluded that caries and alveolar abscesses that drain into the mouth are only contributing factors. The condition of the teeth is very important, however, in the etiology of chronic infections. It was pointed out previously that removal of the tonsils without treatment of sinus infections, infected or carious teeth, may cause the patient to have attacks of pharyngitis, laryngitis or bronchitis subsequently. In this regard, the tonsils seem to protect the lower air passages.

The adenoids alone were removed in a series of cases in order to determine whether or not the glands would subside without a tonsillectomy. As a rule, they will not subside unless the infected tonsils are removed, or the general resistance becomes sufficient to overcome the infection.

As proof that the tonsils are the common source of infection, we refer to the results of the examination of the cervical glands in the 366 cases mentioned above. The object in giving the more detailed notes on 142 cases in Table No. VIII, is to convince the reader that even in the colored race, Russian Jews and peoples that live in unhygienic surroundings, it is possible for all enlarged glands in the upper portion of the anterior triangles to subside after putting the nose and throat in good condition. In 122 of our cases no palpable glands were present at the examination subsequent to the operation, and in 187 they were just palpable at the angles of the jaw.

If the statement is accepted that a chronic tonsillitis is evidenced by a hyperplasia of the adjoining cervical glands, then it is advisable always to consider the removal of the tonsils in cases with palpable glands at the angle of the jaw, particularly if the patient has some general systemic disorder.

We have attempted to point out in this paper what results may be expected from a tonsillectomy in the various types of arthritis, acute rheumatic fever, chorea and nephritis. As to whether or not a tonsillectomy is advisable in an individual case depends on the nature of the malady and the general condition of the patient.

What we wish to emphasize by presenting this group of cases is that the hyperplasia of the glands at the angle of the jaw, so common in children and young adults, is an evidence of chronic infection of the nose or throat. The most frequent situation of the chronic infection is the tonsils. Occasionally we see a patient with evident chronic tonsillitis without palpably enlarged cervical glands, but this is exceptional. When the glands at the angle of the jaw on one or both sides are palpably enlarged it is advisable to consider a removal of the patient's tonsils, regardless of their size or appearance.

In the majority of cases the enlarged glands are apparently due to a chronic pyogenic infection, and will subside after tonsillectomy; in others they are due to tubercle bacilli. In 21 of our 366 cases the glands, subsequent to the operation, gradually

FIG. 1.—M. D., age 11. Surg. No. 33468. Photograph taken in Dec., 1913. Showing large mass tuberculous glands on left side neck. Histological tubercles were found in left tonsil; no tubercles found in right tonsil. Treatment: Removal of the tonsils and local incision and curettage of the suppurating glands. General hygienic measures. No tuberculin treatment.

FIG. 2.—Photograph of patient, shown in Fig. 1, taken Oct., 1916 (nearly 3 years after tonsillectomy). There are no palpably enlarged glands on either side of the neck. The lungs are clear on physical examination. Temperature is normal. Apparently perfectly well.

FIG. 3.—J. M., age 27. Surg. No. 34742. Tonsils and adenoids removed in June, 1914. Histological tubercles were found in both tonsils. The photographs show a mass of tuberculous glands on the right side of the neck that first appeared about two years after the tonsillectomy. The lungs are not involved. Tubercle bacilli probably remained latent in these glands for two years before producing clinical symptoms.

FIG. 4. Showing tuberculous foci in right tonsil of W. S. W., age 7. Surg. No. 29529. The left tonsil also contains numerous tuberculous areas. No evidence of tuberculosis was found in the adenoids. This patient has been observed for over four years. The lungs are clear. The cervical glands are not palpably enlarged, and the child is apparently perfectly well.

FIG. 5.—L. B. Surg. No. 34699. Age 19. The only tuberculous focus found in this tonsil was near the capsule and is shown in the small square. The patient has been observed for more than two years. There is no evidence of involvement of the lungs or glands.

FIG. 6.—Showing the appearance of the tuberculous area indicated by the square in Fig. 5.

FIG. 7.—J. M. Age 27. Surg. No. 34742. The drawing shows tuberculous areas in the right tonsil. Repeated examinations during the past 2½ years have failed to show any evidence of a pulmonary lesion. Tonsils were removed in 1914. About two years later tuberculous glands began to appear on the right side of the neck. Refer to photograph of patient (Fig. 3).

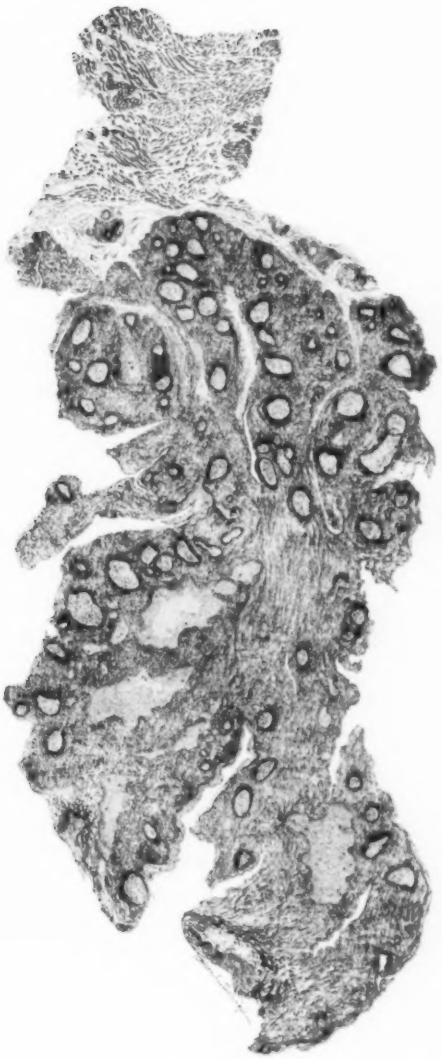


FIG. 8.—G. R. Age 7. Surg. No. 35579. Tonsils and adenoids were removed in Oct., 1914. The drawing shows tuberculous areas in the adenoids. Tonsils were not involved. The enlarged cervical glands have entirely disappeared (Oct., 1916). There has never been any evidence of a pulmonary lesion.

assumed the characteristics of a tuberculous infection. In 36 additional cases the glands did not subside, and are treated as incipient tuberculous glands.

It is advisable that all cases with enlarged cervical glands be treated along general hygienic lines in addition to the local treatment of the nose and throat.

Tonsillectomy alone will not cure a tuberculous cervical adenitis, an arthritis or a glomerular nephritis. It is necessary in these cases to carry out all general measures that will tend to increase the patient's resistance. If the tonsils are the primary focus of infection, however, their removal may materially alter the prognosis by preventing a constant re-infection.

TABLE I.—SUMMARY OF CASES OF TUBERCULOSIS OF THE TONSILS OR ADENOIDS

I. Cases between 1 and 5 Years of Age.

Name. Surg. No. Sex.	Race.	Age.	Clinical Examination. Tonsils, Adenoids, Teeth, Nose, Ears.	Microscopical Examination. Tbc. R. Tonsil.	Tbc. L. Tonsil.	Tbc. Adenoids.	Glands. Size, Situation, Character.	History.
H. W. 29528. Female. 1.	W	4	Tonsils: Much enlarged. Adenoids: Enlarged; mouth-breather. Teeth: Excellent condition. Nose: Turbinate and septum normal. Ears: Normal.	+	+	0	Enlarged in anterior and posterior triangles both sides. Size of hickory-nuts at angles of jaw; freely movable.	Brother (Surg. No. 29529) had Tbc. in both tonsils. No history of Tbc. in family. Have always had certified milk. Nurse has no tbc. lesion. Has frequent colds.
F. C. 33258. Male. 2.	W	5	Tonsils: Almost meet in mid-line. Adenoids: Enlarged; mouth-breather. Teeth: Excellent condition. Nose: Normal. Ears: Normal.	0	+	0	Measure 5 x 8 cm. at angle of jaw on left; soft; not adherent to skin. Axillary and inguinal slightly enlarged.	No history Tbc. in family. Since attack tonsillitis 3 months ago glands neck have been enlarged; anorexia; general malaise.
R. S. 33330. Male. 3.	W	4	Tonsils: Slightly enlarged. Adenoids: Enlarged; mouth-breather. Teeth: Good condition. Nose: Normal. Ears: Normal.	0	0	+	Enlarged at angle of jaw on both sides. 6 x 2 cm. on right. Soft; not adherent to skin; not tender.	Frequent sore throat. Attacks with "chills and fever." Mouth-breather; difficulty in swallowing; and "knots in neck."
J. H. 34189. Male. 4.	W	5	Tonsils: Slightly enlarged; adherent. Adenoids: Small. Teeth: Normal. Nose: Normal. Ears: Normal.	+	0	0	Enlarged on both sides. 5 x 3 cm. at angle of jaw on right; hard; fixed; not adherent to skin on right. No general glandular enlargement.	No Tbc. in family. Never had sore throat. Onset with enlarged glands on right 6 months ago; on left 3 months ago. Fever for 6 months; loss of appetite.
N. N. 36033. Male. 5.	C	5	Tonsils: Small, adherent. Adenoids: Large. Teeth: Carious. Nose: Normal. Ears: Drums intact; retracted; hearing impaired.	+	+	Sections lost.	Enlarged on both sides, particularly on right. Hard, movable. Diag. in Phipps Dispensary is tuberculous cervical adenitis.	Pneumonia and measles at 2; frequent colds; bad hearing; no discharge from ears.

II. Cases between 6 and 10 Years of Age.

E. M. 29388. Male. 6.		8	Tonsils: Very large. Adenoids: Large mass; mouth-breather. Teeth: Many carious. Nose: Normal. Ears: Normal.	0	0	+	Enlarged in anterior and posterior triangles on both sides; hard; discrete; no matting.	Frequent attacks tonsillitis for past 6 years. Has had nearly all children's diseases. Mouth-breather all his life. No family history of Tbc.
R. B. 30491. Male. 7.	W	10	Tonsils: Slightly enlarged; not adherent. Adenoids: Small mass. Teeth: Few carious.	+	0	Sections lost.	Glands neck not palpable on either side.	No history suggesting Tbc. in patient or family. Never had sore throat. Is mouth-breather.
R. H. 31504. Male. 8.	C	9	Tonsils: Much enlarged. Adenoids: Large mass. Nose: Normal. Teeth: Good condition.	+	Sections lost.	Sections lost.	Enlarged on both sides; hard; matted; not adherent to skin. Very suggestive of tbc. glands.	No history of Tbc. No previous illness. Was backward in walking and talking. Mouth-breather.
C. M. 32187. Male. 9.	W	9	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Carious. Ears: Normal.	0	0	+	At angle of jaw measure 2 x 3 cm. Hard; freely movable; not adherent.	No history of Tbc. in family. Only previous illness measles. Frequent attacks tonsillitis with marked swelling glands neck.
H. P. 33070. Male. 10.	W	10	Tonsils: Enlarged; right larger than left. Adenoids: Small amount. Teeth: Very bad condition. Nose: Deflected septum. Ears: Normal.	+	0	Sections lost.	Enlarged on both sides in anterior and posterior triangles. 2 x 3 cm. at angle of jaw on both sides. Hard; movable; not tender; not matted.	Congenital lues? No history of Tbc. in family. Frequent attacks tonsillitis.
A. C. 33385. Male. 11.	C	10	Tonsils: Much enlarged. Adenoids: large mass. Teeth: Good condition. Ears: Normal.	0	0	+	Enlarged in anterior and posterior triangle both sides. Hard; movable; not matted.	No history of Tbc. in family. Has had measles, diphtheria, pneumonia and poliomyelitis. Almost constant sore throat for past 3 years. Frequent febrile attacks.
G. R. 35579. Female. 12.	W	7	Tonsils: Much enlarged. Adenoids: Large. Teeth: Good condition. Ears: Normal.	0	0	+	Enlarged both sides neck, hard; not matted; not tender.	Frequent attacks tonsillitis for past 2 years. Glands neck much enlarged with each attack.
E. K. 36818. Male. 13.	W	7	Tonsils: Enlarged; adherent. Adenoids: Large. Teeth: Carious. Ears: Normal.	0	0	+	Enlarged at angles of jaw on both sides. Hard; movable; not tender; not matted.	Frequent attacks tonsillitis. Frequent attacks arthritis. Frequent attacks fever. No history Tbc. in family.
C. N. 37805. Female. 14.	W	7	Tonsils: Enlarged; adherent. Adenoids: Enlarged. Teeth: Carious. Ears: Normal. Nose: Normal.	+	+	+	At angle jaw on right 4 x 3 cm. Enlarged on left and in posterior triangles.	Has had scarlet fever and diphtheria. No history sore throat. Mouth-breather. No history of Tbc. in family.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

I. CASES BETWEEN 1 AND 5 YEARS OF AGE.

General Physical Examination. Tuberculin Test.	Temp. (Mouth) on Day Before Operation. ° F.	Date and Indication for Operation.	Post-operative Complications.	Subsequent Examination.
No general glandular enlargement. Lungs and heart: Normal. Urine: Trace of albumin. Spleen: Not palpable.	98.6	Mar., 1912. Enlarged cervical glands and mouth-breathing.	None.	April, 1915 (3 years after operation). No palpable glands. Colds infrequent; breathing normal. General health excellent. Oct., 1916. Perfectly well. No symptoms of Tbc. of cervical glands or lungs.
Heart and lungs negative. W. B. C.: 7800. Hb.: 71%.	99	Nov., 1913. Enlarged cervical glands and mouth-breathing.	None.	On the day following the operation the glands had decreased to one-half former size. Jan., 1914 (3 months after operation). Glands still palpable but not visible. Has gained weight. General condition improved. Oct., 1916. General health good. Cervical glands: Not palpable in anterior triangles; just felt in posterior triangles. Lungs: Normal on physical examination.
Heart and lungs normal. No general glandular enlargement. Pirquet positive.	99	Nov., 1913. Enlarged cervical glands; mouth-breather; frequent sore throat.	None.	June, 1915 (19 months after operation). Glands barely palpable on both sides. Temperature normal. X-ray of chest reported normal. Pirquet test positive. Oct., 1916. General health good. Weight 50 pounds. Glands at angles jaw not palpable. Just felt in both posterior triangles.
Heart, lungs, kidneys normal. X-ray chest normal. Tbc. skin test positive.	99-105	Mar., 1914. Tbc. glands neck right.	None.	Jan., 1915. Has been kept quiet; temperature to 99.2° F. evening; appetite good. Examination at H. L. H. Lungs negative. Glands on right fluctuate—opened, local curettage. Mar., 1915. Otitis media acute on right; other glands suppurate on right; opened. Nov., 1915. Fistulæ healed. Lungs normal. Glands on left not palpable; on right measure 3 x 2 cm. No other glands enlarged. Weight 67 pounds. Temperature normal for past 3 months. Is still kept quiet. Jan., 1916. Temperature normal for over a year. Glands on right barely palpable. General health excellent.
Retrosternal dullness. Dullness at both apices. No râles heard. Spleen palp. Tbc. skin test positive.		Jan., 1914. Enlarged glands. Mouth-breathing.	None.	Sept., 1915 (21 months after operation). Has gained weight; no colds since operation; cervical glands size lima beans; discrete; hard; movable. X-ray of chest: Marked enlargement mediastinal glands. Wassermann negative. Oct., 1916. General health good. Glands about same as in above note. Teeth carious. Nose and throat look normal. Temperature 98.6° F. Weight 42 pounds. Slight impairment of percussion note at both apices; no râles. Skin test O. T. positive. X-ray report: Enlarged mediastinal glands; chronic infiltration of both lungs, probably tuberculous. Sent to dental department.

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.

Undersized. Physically and mentally 4 years retarded. Lungs: Percussion note impaired to 3d rib on both sides. No general glandular enlargement. W. B. C.: 14,000. Hb.: 75%. Tbc. skin test positive.	99	Mar., 1912. Enlarged cervical glands; mouth-breather; frequent tonsillitis; retarded development mentally and physically.	None.	June, 1915 (over 2 years after operation). Glands barely palpable. Has grown and gained in weight. Marked improvement in mentality. No colds or sore throats since operation. Lungs: Still impairment of percussion note over both uppers; no cough; appetite good; tuberculin tests still positive; skin and 1% Calmette (eye). Oct., 1916. General health excellent. Has grown rapidly. Glands: Not palpable at angle jaw right; just felt on left and in posterior triangles. Lungs clear on physical examination (Phipps Dispensary). Skin test O. T. positive.
No glandular enlargement. Lungs: Normal. Heart: Evidence of old endocarditis. Spleen: Not enlarged.		Sept., 1912. Mouth-breathing and heart condition.	None.	Jan., 1916 (over 3 years after operation). In perfect health. Glands not palpable. Lungs normal.
Some general glandular enlargement. Rickets; rosary; enlarged ends long bones. Lungs and heart normal. Tbc. skin test positive.	99	Feb., 1913. Enlarged glands of neck.	None.	Jan., 1915 (2 years after operation). Glands anterior and posterior triangles not palpable. Lungs normal. General health excellent. Tbc. skin test positive. Oct., 1916. General health good. Cervical glands not palpable on either side. No sore throat since operation. No cough. Nose, throat and ears look normal. Weight 77½ pounds. Lungs, heart, abdomen normal on physical examination (Phipps Dispensary). Tuberculin skin test O. T. negative. Wassermann positive. Urine normal.
Some general glandular enlargement. Heart and lungs normal. Von Pirquet positive.	98.6	May, 1913. Frequent attacks tonsillitis; mouth-breather; acute attack cervical adenitis.	None.	June, 1915 (2 years after operation). Glands still enlarged; numerous discrete ones measure 1½ x 1 cm. on both sides neck. The supraclavicular, axillary and inguinal glands not enlarged. Spleen just palpable. Heart and lungs normal. Pirquet test positive.
General glandular enlargement (lues). Heart and lungs normal. W. B. C.: 9000. Hb.: 78%.	99.8	Oct., 1913. Frequent attacks tonsillitis (carious teeth pulled at same time).	None.	June, 1915 (1½ years after operation). Gland at angle jaw on left 1.5 x 3 cm.; barely palpable on right. Carious lower molar teeth may account for enlarged glands. Has skin lesions suggestive of tuberculids. Since operation on tonsils one of glands on left side of neck has suppurated; was treated by local incision and curettage; is not healed. No general glandular enlargement. Spleen not felt. Lungs clear. Pirquet test positive.
General glandular enlargement. Ascaris infection. Heart and lungs normal.	98.6	Dec., 1913. Frequent attacks tonsillitis. Swelling cervical glands. Headaches.	None.	July, 1915 (1½ years after operation). Glands in anterior triangle not palpable; just felt in posterior triangles. Teeth very bad condition. The axillary, inguinal and epitrochlear glands enlarged. No headaches since operation. No sore throat since operation. Wassermann positive. Oct., 1916. General health good. Nose, throat and ears are normal. Cervical glands not over ½ cm. diameter. Temperature normal. Weight 82 pounds. Epitrochlears still enlarged. Wassermann still positive. Tuberculin test skin O. T. positive.
Heart and lungs normal. No general glandular enlargement. Liver 2 f. b. below c. m. Pirquet positive.	98	Oct., 1914. Frequent attacks tonsillitis. Mouth-breathing. Enlarged cervical glands.	None.	June, 1915 (8 months after operation). Gland at angle jaw on left 2 x 1 cm.; hard; movable. Just palpable on right and in posterior triangles. No general glandular enlargement. Spleen not felt. Liver same size as previous examination. Lungs normal. Pirquet positive. Oct., 1916. General health good. Gland on left much smaller; size shot in posterior triangles and on right in anterior triangle. Nose, throat and ears look normal.
Heart: Aortic and mitral insufficiency and stenosis. Lungs: Normal. No general glandular enlargement.	98.4	April, 1915. Frequent attacks tonsillitis, endocarditis, rheumatic fever. Enlarged cervical glands.	None.	Oct., 1916 (18 months after operation). General health good. No sore throat since operation. Pain in knees, ankles and arms 6 months ago; no swelling; was not in bed. Joints now normal. Glands neck not larger than 1 cm. in diameter on either side. Nose, throat and ears normal. Lungs examined in Phipps Dispensary; no tuberculous pulmonary condition. Heart as before. Skin O. T. +.
Lungs: Normal on percussion and ausculation. X-ray: Mediastinitis. Pirquet positive. No general glandular enlargement.	100	Sept., 1915. Enlarged cervical glands right. Mouth-breather. (Carious teeth pulled.)	None.	Nov., 1915 (2 months after operation). Glands same as at operation. On right is hard, not adherent. Temperature 99-100° F. Jan., 1916 (4 months after operation). Glands on right smaller; now measure 3 x 1 cm.; still hard. Temperature normal to-day. Oct., 1916. Gland on right slightly smaller; hard; movable. Glands in other triangles just palpable. General condition much improved. Nose and throat look normal. Removal tuberculous glands neck on right. To have tuberculin treatment.

TABLE I.—SUMMARY OF CASES OF TUBERCULOSIS OF THE TONSILS OR ADENOIDS

II. Cases between 6 and 10 Years of Age.—Continued.

Name. Surg. No. Sex.	Race.	Age.	Clinical Examination. Tonsils, Adenoids, Teeth, Nose, Ears.	Microscopical Examination. Tbc. R. Tonsil.	Tbc. L. Tonsil.	Tbc. Adenoids.	Glands. Size, Situation, Character.	History.
A. S. 37093. Male. 15.	C	8	Tonsils: Much enlarged. Adenoids: Enlarged. Nose: Normal. Ears: Normal. Teeth: Good.	+	0	0	Mass glands at angle jaw on both sides. Measures 6 x 4 cm. left; 2 x 3 cm. right. Numerous small glands in both posterior triangles. Not adherent to skin; not tender; hard.	Frequent tonsillitis; frequent "colds in head." Glands in neck get larger at times and then almost disappear for a while.
E. R. 38151. Female. 16.	W	10	Tonsils: Enlarged; especially left. Adenoids: Large. Teeth: Many carious. Ears: Normal. Nose: Normal.	0	+	0	Enlarged at angle of jaw and submaxillary triangles both sides. Hard; not adherent.	Several of the infectious children's diseases. Frequent tonsillitis. Mouth-breather. Frequent headaches. Grandmother died pulmonary Tbc. Mother has pulmonary Tbc.
O. F. 38597. Female. 17.	C	10	Tonsils: Much enlarged. Adenoids: Large; mouth-breather. Ears: Not infected. Teeth: Carious. Nose: Discharge; otherwise normal.	0	+	0	Slightly enlarged in all triangles; about 1 cm. in diameter at angle jaws.	Frequent tonsillitis and mouth-breathing.
A. B. H. L. H. 7626. Male. 18.	W	10	Tonsils: Enlarged; adherent. Adenoids: Large. Teeth: Good. Ears: Normal. Nose: Normal.	+	0	0	Large mass 4 x 8 cm. at angle jaw left. Adherent; matted together. Numerous discrete, hard glands in right anterior triangle and both posterior triangles.	No history Tbc. in family. Pneumonia twice. Frequent tonsillitis for past 2 years.

III. Cases between 11 and 15 Years of Age.

Name. Surg. No. Sex.	Race.	Age.	Occupation.	Special Examination. Tonsils, Adenoids, Teeth, Nose, Ears.	Microscopical Examination. Tbc. R. Tonsil.	Tbc. L. Tonsil.	Tbc. Adenoids.	Glands. Size, Situation, Character.	History.
J. B. 31047. Female. 19.	W	14	School.	Tonsils: Much enlarged; right larger than left. Adenoids: Large mass. Teeth: Carious. Nose: Normal. Ears: Normal.	+	+	0	On left mass measures 6 x 10 cm. with chain of enlarged glands to clavicle. On palpation are fluctuant, adherent to skin, and matted together. Glands barely palpable on right or in posterior triangles.	No history of Tbc. in family. Measles, varicella, scarlet fever. Frequent attacks of tonsillitis. Almost constant left-sided sore throat. No night-sweats or cough. Onset 1 year before admission with swelling glands left-side neck.
F. N. 31486. Male. 20.	W	9	School.	Tonsils: Enlarged; left larger than right. Adenoids: Large mass. Nose: Negative aside from discharge due to adenoids. Ears: Not infected. Teeth: Carious.	0	+	0	Mass glands left at angle jaw; measure 7 x 5 cm. fluctuate; adherent to skin. Typical tbc. glands.	Frequent colds; no history tonsillitis. Gland began to enlarge on left 1 year ago. Has at times almost disappeared. Recently became rapidly enlarged; never painful.
M. D. 33468. Female. 21.	W	11	School.	Tonsils: Had been partially removed because enlarged; since then frequent sore throats. Adenoids: Had been removed. Teeth: Carious. Ears: Normal. Nose: Normal.	0	+	No tissue removed at opn.	On left mass measuring 8 x 10 cm. Adherent to skin; fixed to underlying tissues; soft. But slightly enlarged on right and in posterior triangles.	No history of Tbc. in family. Mumps, whooping cough and measles. Following tonsillitis 5 month ago glands neck on left began to swell. Never tender. No coughs; night-sweats or loss of weight. Appetite poor.
M. H. 35638. Female. 22.	C	14	School.	Tonsils: Much enlarged. Adenoids: Small amount. Teeth: Good. Ears: Normal. Nose: Hypert. inf. turb., double.	+	+	Sections lost.	On left mass of glands at angle of jaw measuring 5 x 7 cm.; firm; not tender; movable; not adherent to skin. Small discrete glands along sternomastoid on right and in posterior triangles.	No history of Tbc. in family. Frequent sore throats for past 4 years. Some loss of weight; loss of appetite; night-sweats. First noticed enlarged glands neck 2 weeks ago; after cold.
M. F. 35652. Female. 23.	W	13	School.	Tonsils: Much enlarged; not adherent to pillars. Adenoids: Large. Nose: Deflected septum. Ears: Chronic catarrhal otitis media. Teeth: Good.	+	0	0	Mass glands at angle jaw right and under sternomastoid 6 x 4 cm.; fluctuates; matted together. Numerous discrete glands on left and in both posterior triangles.	No history of Tbc. in family. History of sore throats and headache. Enlarged gland first noticed June, 1914, following abscessed tooth.
I. G. 36761. Male. 24.	W	12	School.	Tonsils: Not enlarged; adherent. Adenoids: Large mass. Nose: Purulent discharge right one due to infection frontal and antrum. Hypert. inf. turb. right. Ears: Normal. Teeth: Carious.	0	0	+	Mass of glands at the angle of the jaw on both sides measuring 5 x 3 cm. Enlarged glands in posterior triangles on both sides. All glands are hard; some periadenitis; not adherent to skin.	Frequent attacks tonsillitis. Mouth-breather. Frontal headaches. Dyspnœa on exertion. Enlarged cervical glands noted for one year.
M. W. 37485. Female. 25.	W	15	School.	Tonsils: Were partially removed 10 years ago. Adenoids: Large mass; mouth-breather. Ears: Chronic catarrhal otitis media. Nose: Hypert. inf. turb.; sinuses clear. Teeth: Good.	0	0	+	Enlarged glands on both sides neck at angle jaw; matted together. On right they are adherent to skin and fluctuate.	Frequent sore throat; nausea; "often has fever"; glands neck swell and subside at frequent intervals for 2 years. Had asthma when a child; none for several years past.
E. B. 37521. Male. 26.	C	12		Tonsils: Were partially removed 3 years ago. Adenoids: Large mass; mouth-breather. Ears: Chronic catarrhal otitis media; deafness. Nose: No sinus infection; otherwise normal. Teeth: Good.	0	0	+	Slightly enlarged on both sides in anterior and posterior triangles. Not tender; discrete; movable.	Came to dispensary on account impaired hearing. Has frequent sore throat and almost continual "cold in head." Never any discharge from ears.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.—Continued.

General Physical Examination. Tuberculin Test.	Temp. (Mouth) on Day Before Operation. ° F.	Date and Indication for Operation.	Post-operative Complications.	Subsequent Examination.
Lungs: Clear on posterior and anterior. Heart: Normal. Urine: Normal. W. B. C.: 12,700. Hb.: 75%. Spleen: Not palpable. General glandular enlargement. General glandular enlargement. Lungs and heart normal. Pirquet positive. X-ray: Marked mediastinitis.	98	May, 1915. Chronic tonsillitis. Cervical adenitis.	None.	Dec., 1915. Died of tuberculous meningitis.
	99	Oct., 1915. Frequent tonsillitis. Mouth-breather. Enlarged cervical glands.	None.	Nov., 1915 (1 month after operation). Glands at angles of jaw measure 1 x 1 cm. General condition and appetite improved. Breathing normal. Oct., 1916. Temperature 99° F. Weight 76½ pounds. Nose and throat normal. Lungs clear on physical examination (Phipps Dispensary). Skin test O. T. positive. Sent to dental department on account carious teeth. Glands at angle jaw smaller.
Heart: Normal. Lungs: Clear on perc. and ausc. Spleen: Not palpable. General glandular enlargement. Urine: Normal.	98.6	Dec., 1915. Chronic tonsillitis. Enlarged adenoids. (Extraction carious teeth.)	None.	Sept., 1916. General health good. Temperature 99.4° F. Lungs clear on perc. and ausc. Skin test +. Weight 75 pounds. Cervical glands not palpable. (The slight elevation temperature probably due to coryza.)
No general glandular enlargement. Spleen not felt. Heart and lungs normal on perc. and ausc. X-ray: Lungs practically normal. Pirquet positive.	100	May, 1915. Frequent tonsillitis. Clinically tbc. glands neck.	None.	June, 1915 (1 month after operation). Glands same. Temperature 99° F. evening. Aug., 1916. No glands palpable on either side neck. Temperature never above normal for past 8 months. General health excellent.

III. CASES BETWEEN 11 AND 15 YEARS OF AGE.

General Physical Examination. Tuberculin Test.	Temp. (Mouth) on Day Before Operation. ° F.	Date and Indication for Operation.	Post-operative Complications.	Subsequent Examination.
No general glandular enlargement. Enlarged cervical glands left. Heart and lungs normal. Liver and spleen not palpable. Kidneys: Albumin .5 gm. to liter; few casts; few red blood cells. Blood: W. B. C. 8000; Hb. 87%.	99	Dec., 1912. Tuberculous glands left. Frequent tonsillitis. (Incision and local curettage tbc. glands on left at same time.) Advised tuberculin treatment. Carious teeth extracted.	None.	Jan., 1916 (over 3 years after operation). Has had tuberculin treatment since operation. There is no discharging sinus in neck. Glands are not palpable in anterior triangles on either side; few discrete, hard, movable glands in posterior triangle on left. No general glandular enlargement. Teeth in good shape. Throat looks normal. Lungs clear . General health excellent. Moved to Harrisburg, Pa.
Heart: Normal. Lungs: Clear on perc. and ausc. W. B. C.: 10,000. Hb.: 75%. No general glandular enlargement.	99.6	Feb., 1913. Tbc. glands neck left. Mouth-breather. (Extraction carious teeth. Incision, drainage tbc. abscess neck left.)	None.	Feb., 1916 (3 years after operation). Patient refuses to return for examination. Nurse reports he is healthy looking boy, and that there are no enlarged glands on inspection. Goes to school regularly.
No general glandular enlargement. Enlarged cervical glands left. Heart and kidneys normal. Lungs: Normal with the exception of a few râles at right base. Tbc. skin test positive. W. B. C.: 9500. Hb.: 73%.	98.6	Dec., 1913. Tbc. cervical glands left. Tonsillitis attacks. Tuberculin treatment advised. Carious teeth extracted.	None.	Dec., 1915 (2 years after operation). Has had tuberculin treatment. The glands at angle of jaw on left have suppurated, been treated by local incision and curettage; at present sinus healed leaving three inconspicuous scars. There is still visible fullness on left side neck, but about one-fourth as large as at operation in 1913. General health excellent. Lungs clear. Teeth carious. Throat looks normal. April, 1916. Glands barely palpable on left side neck; not palpable on right. General health excellent. Pirquet markedly positive. X-ray chest suggests tbc. apices on both sides; no physical signs or râles; temperature normal; appetite good. Weight 98½ pounds. Oct., 1916. Health good. Weight 115 pounds. Shotty glands in posterior triangles of neck; palpable glands at angles of jaw. Throat normal. Chest (H. L. H.) normal.
General glandular enlargement. Tbc. cervical glands left. Heart: Normal. Lungs: No physical signs of Tbc. Kidneys: Albumin and a few casts. Calmette: Positive.	98-101	Nov., 1914. Frequent sore throats. Tbc. cervical glands left. (Tuberculin treatment advised.)	None.	June, 1915 (8 months after operation). Has had tuberculin treatment. No improvement in glands neck. The mass at angle of jaw on left is larger than in Nov., 1914; measures 7 x 8 cm.; matted together; still hard. Above clavicle in posterior triangle on left there is a mass of enlarged glands. Throat looks normal. No cough; has gained weight since operation. Lungs: No signs of pulmonary Tbc. Advised to re-enter hospital for removal of tbc. glands neck.
No general glandular enlargement. Tbc. cervical glands right. Heart: Normal. Lungs: Clear on perc. and ausc. Kidneys: Normal. Tbc. skin test positive.	98.8	Nov., 1914. Tbc. cervical glands right. History tonsillitis. Tuberculin treatment advised. (Incision and local curettage.)	None.	Aug., 1915 (10 months after operation). Has had tuberculin treatment. The incision for drainage glands on right side neck is healed. The glands on right side neck barely palpable; none larger than 1 cm. in diameter; all discrete. There are a few glands of the same size and character in anterior triangle on left. Throat looks normal. No general glandular enlargement. Lungs normal. General health excellent. Oct., 1916. Temperature 98.8° F. Weight 100 pounds. Cervical glands just palpable. Lungs clear on physical examination (Phipps Dispensary). Skin test O. T. positive (very slight). General health excellent.
Heart: Mitral insufficiency; heart not enlarged. Lungs: Clear on perc. and ausc. Kidneys: Normal. X-ray: Shows frontal and antrum infection on right.	98.7	April, 1915. Enlarged cervical glands at angle jaw on both sides. Tonsillitis. Mouth-breather. Heart lesion. (Extraction carious teeth.) (Crushing back inf. turb. rt.)	None.	Dec., 1915 (9 months after operation). Glands at angle of jaw on each side measure 1 x 2 cm.; hard; movable. No palpable glands in posterior triangles. Has rapidly gained weight since operation. Appetite good. No headaches; no discharge in right side nose. Heart: Same as before. Lungs: Clear.
Heart: Normal. Lungs: Clear on perc. and ausc. Spleen not palpable. No general glandular enlargement. Urine normal. Skin and eye test positive.	98.5	July, 1915. Tbc. glands neck double. Chronic tonsillitis. Mouth-breather. (Excision infected tbc. gland right.)	None.	Nov., 1915. Wound neck healed perfectly. Glands barely palpable on left and in posterior triangles. There is an indefinite, deep mass under the scar on the right. Throat and nasopharynx look normal. Mar., 1916. General health excellent. No recurrence tbc. glands on either side. Lungs clear on perc. and ausc. Oct., 1916. Temperature 99.4° F. Weight 99½ pounds. Impaired percussion note at both apices; no râles (Phipps Dispensary). X-ray report: Enlarged mediastinal glands. Skin test O. T. positive. Nose and throat normal. Cervical glands barely palpable.
Heart: Normal. Lungs: Clear on perc. and ausc. Urine: Normal. No general glandular enlargement.	98	July, 1915. Chronic tonsillitis. Chronic catarrhal otitis media. Mouth-breather.	None.	Nov., 1915. Glands on right side neck barely palpable; those at angle jaw on left are larger than at operation; not matted together; hard; not adherent to skin. Hearing improved. Throat and nasopharynx: Normal. Oct., 1916. Health same as before operation. Glands: Numerous ⅛ to 1 cm. in diameter at edge of jaw on both sides. Throat normal. Thinks hearing is worse. Examination of lungs (Phipps Dispensary); impaired percussion note above and below the clavicles. Skin O. T. +.

TABLE I.—SUMMARY OF CASES OF TUBERCULOSIS OF THE TONSILS OR ADENOIDS

III. Cases between 11 and 15 Years of Age.—Continued.

Name. Surg. No. Sex.	Race.	Age.	Occupation.	Special Examination. Tonsils, Adenoids, Teeth, Nose, Ears.	Microscopical Examination. Tbc. R. Tonsil.	Tbc. L. Tonsil.	Tbc. Adenoids.	Glands. Size, Situation, Character.	History.
T. R. 38358. Male. 27.	C	14	School.	Tonsils: Small; embedded; adherent to pillars. Adenoids: Very small amount. Teeth: Carious. Ears: Normal. Nose: Normal.	0	0	+	Slightly enlarged at angle jaw and in posterior triangle on each side. Measure about 1½ cm. in diameter. Discrete, mobile, hard.	Frequent tonsillitis. No chronic cough; night-sweats or loss of weight.
A. D. 38539. Male. 28.	W	13	School.	Tonsils: Enlarged; adherent to pillars. Adenoids: Small amount. Ears: Chronic catarrhal otitis media. Teeth: Carious. Nose: Deflected septum to left.	+	+	0	Enlarged at angle jaw on each side; measure 2 x 3 cm. Hard, discrete, movable, not tender. Just palpable in posterior triangles.	Frequent sore throat, especially during past year. No cough or other symptoms of Tbc.
O. M. 38651. Female. 29.	W	11	School.	Tonsils: Much enlarged. Adenoids: Large mass; mouth-breather. Ears: Not infected. Nose: No sinus infection. Teeth: Good.	0	+	0	At angle jaw on each side measure about 2 cm. in diameter. Discrete, hard, movable. Smaller glands in posterior triangles and along sternomastoid. Scar of previous operation for tbc. glands neck on left.	Frequent tonsillitis, colds and difficulty in breathing through nose. No cough or other symptoms of Tbc.

IV. Cases between 16 and 25 Years of Age.

J. W. 30979. Male. 30.	W	19	Clerk.	Tonsils: Both enlarged; left, larger than right. Adenoids: Enlarged. Nose: Normal. Teeth: Good condition. Ears: Normal.	0	0	+	Enlarged at angle of jaw on both sides. Hard; discrete; not adherent to skin. Few small discrete glands in both posterior triangles.	For many years has had frequent attacks tonsillitis. Measles and scarlet fever. Hemoptysis once with an attack tonsillitis. Average weight 125 pounds. Has no cough; night-sweats; or loss of appetite.
E. K. 31381. Female. 31.	W	18	School.	Tonsils: Enlarged. Adenoids: Enlarged. Nose: Hypert. inf. turb. left, no sinus infection. Teeth: In bad condition. Ears: Chronic catarrhal otitis media.	+	+	+	Enlarged; soft; not fluctuant; discrete; tender on both sides neck at angle jaw. Few discrete, hard glands in posterior triangles.	Frequent sore throats. General health good. No symptoms of Tbc. noticed by patient. Comes to dispensary on account sore throats.
J. K. 32018. Male. 32.	W	25	Clerk.	Tonsils: Large; nodular; adherent to pillars. Adenoids: Large mass. Nose: Deviated septum; hypert. inf. turb. right. Ears: Normal. Teeth: Good.	+	+	0	Enlarged at angle of jaw on both sides, especially right. Hard; discrete; not adherent to skin. Few enlarged glands in posterior triangles.	Frequent attacks acute tonsillitis. Glands enlarged for 6 months. Grandmother died pulmonary Tbc. Had measles and pneumonia. No cough; night-sweats; loss weight. Slight elevation temperature evening for 6 mos.
J. I. 32119. Male. 33.	W	20	Tailor.	Tonsils: Much enlarged. Adenoids: Large; mouth-breather. Nose: Hypert. inf. turb. right. Ears: Chronic otitis media left. Teeth: Poor.	0	0	+	Glands neck not enlarged.	No history of Tbc. in family; no cough. Chief complaint is frequent sore throats for past 3 years. Mouth-breather.
C. L. 32445. Female. 34.	W	18		Tonsils: Right much enlarged; left small. Adenoids: Very small amount. Teeth: Excellent. Nose: Normal. Ears: Normal.	+	0	0	Glands neck not enlarged. Numerous hard, discrete glands in posterior triangles.	No history Tbc. in family. Always delicate. Measles, whooping cough, diphtheria. Has not been well since "grippe" 5 years ago. Enlargement thyroid noted 3 years ago. Frequent headaches and attacks of tonsillitis. Albumin discovered in urine 15 months ago.
M. B. 33265. Female. 35.	W	19	School.	Tonsils: Not enlarged; densely adherent to pillars. Adenoids: Small amount. Teeth: Excellent. Nose: Normal; sinuses clear. Ears: Normal.	0	+	0	Mass of glands measuring 3 x 8 cm. at angle of jaw on left. Involves both anterior and posterior triangles. Has had a discharging sinus on left side neck for 5 months. Typical tbc. glands.	No history Tbc. in family. Has been away to school for several years. Two attacks of tonsillitis during past 2 years. Has lost 20 pounds; poor appetite; always tired.
E. S. 33532. Male. 36.	W	24	Student.	Tonsils: Not enlarged; densely adherent. Adenoids: Very small amount. Teeth: Good. Nose: Hypert. inf. turbinates; mouth-breather. Ears: Normal. Has a chronic pharyngitis.	+	0	No tissue removed at opn.	Glands neck not enlarged. Few palpable glands in all triangles.	No history Tbc. in family. Chief complaint is frequent colds; hoarseness; tendency to clear throat. Diphtheria at age of 2½ years.
M. G. 34695. Female. 37.	C	22	Housework.	Tonsils: Not enlarged; adherent. Teeth: Good. Adenoids: Small amount. Nose: Normal. Ears: Normal.	0	+	+	Mass glands at angle jaw on right measuring 5 x 8 cm.; marked periadenitis; fluctuant. Typical tbc. glands. Glands on left not enlarged; in posterior triangles not enlarged.	No history of Tbc. in family. No illness except mumps in childhood. Swelling at angle right jaw first noted 3 years ago. Intermittent increase and decrease in size of gland with every coryza and tonsillitis. Has had no fever. Frequent attacks of tonsillitis and quinsy.
L. B. 34699. Female. 38.	W	19	Student.	Tonsils: Right larger than left; both adherent to pillars. Adenoids: Very small amount. Nose: Hypert. inf. turb. right. Teeth: Excellent. Nose: Normal.	0	+	No tissue removed at opn.	Measure 5 x 8 cm. at angle of jaw on right; also enlarged at angle of jaw on left. Hard, movable, not adherent to skin.	Had septic sore throat about one year ago; was then at school in Boston. Enlarged glands neck first appeared at this time. With each cold or sore throat they increase in size, then subside. No history Tbc. in family. Has frequent headaches; tires easily.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

III. CASES BETWEEN 11 AND 15 YEARS OF AGE.—Continued.

General Physical Examination.	Temp. (Mouth) on Day Before Operation. ° F.	Date and Indication for Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Heart: Normal. Lungs: Clear on perc. and ausc. Spleen: Not palpable. Urine: Normal.	97.6	Nov., 1915. Chronic tonsillitis. Cervical adenitis. (Extraction carious teeth.)	None.	Oct., 1916. General health good. Has gained in weight. No sore throat since operation. Cervical glands just palpable. Marked lymphoid hyperplasia on posterior wall pharynx, otherwise nose, ears and throat are normal.
Heart: Normal. Lungs: Clear. Spleen: Not palpable. Urine: Normal. W. B. C.: 12,900. Hb.: 90%.	99	Dec., 1915. Chronic tonsillitis. Cervical adenitis. (Extraction carious teeth.)	None.	Sept., 1916. General health excellent. Gland at angle jaw on left same as at operation; is barely palpable on right. Glands in posterior triangles are slightly larger than at operation. Throat looks normal aside from lymphoid hyperplasia on pharynx wall. Tbc. skin test +. Temperature 99.6° F. Lungs clear on perc. and ausc. Is receiving tuberculin injections for tbc. cervical adenitis.
No general glandular enlargement. Lungs: Clear on perc. and ausc. Heart: Normal. Spleen: Not palpable. General glandular enlargement. Urine: Normal. Pirquet: Positive. Calmette 1%; negative.	99.1	Jan., 1916. Chronic tonsillitis. Mouth-breather. Tbc. glands neck. (Has had two operations for removal tbc. glands neck; last 2 years ago.)	None.	Sept., 1916. Recurrence tuberculous glands neck. General condition not improved. Suspicious involvement of right apex on physical examination and X-ray. No rales. Is getting tuberculin injections for the tuberculous glands. Throat normal. No glandular enlargement except two small shotty nodules along the scar at angle of left jaw.

IV. CASES BETWEEN 16 AND 25 YEARS OF AGE.

No general glandular enlargement. Lungs: Percussion note left apex impaired; a few rales after coughing. Heart: Normal. Liver and spleen not palpable. Kidneys: Normal. W. B. C.: 12,000. Hb.: 85%.	98-99	Nov., 1912. Frequent attacks tonsillitis. Enlarged cervical glands.	None.	Feb., 1916 (over 3 years after operation). General health has been excellent since operation. Works regularly. No cough or other symptoms of tuberculosis. Glands not palpable at angle of jaws. Throat normal.
No general glandular enlargement. Lungs: Clear on perc. and ausc. Heart: Normal. Urine: Normal.	99	Jan., 1913. Frequent attacks tonsillitis. Enlarged cervical glands. (Referred to dentist.)	None.	Aug., 1915 (over 2½ years after operation). No palpable glands at angle of jaw on right; measures about ½ cm. in diameter at angle jaw on left. Barely palpable in posterior triangles. General health good; no sore throats since operation. Ears: Improved. Lungs clear.
Lungs: No physical signs. X-ray diagnosis: Old tbc. process at right apex and base. Heart: Normal. Urine: Normal.	99	May, 1913. Frequent attacks tonsillitis. Enlarged cervical glands. (Nasal operation also done.)	None.	Dec., 1915 (over 1½ years after operation). General health better than ever before; has gained weight; temperature and pulse normal for past year. Has been working regularly since operation.
Lungs: Clear on perc. and ausc. Heart: Normal. Urine: Normal.	97.6	May, 1913. Frequent attacks tonsillitis. Mouth-breathing. Chronic otitis media left. (Nasal operation also.)	None.	Oct., 1915 (2½ years after operation). No palpable glands. General health much improved since tonsillectomy. Breathes normally through nose. Throat looks normal; nasopharynx normal. Discharge from ear has stopped; hearing good.
Enlarged thyroid; exophthalmos; Von Graefe positive. Heart slightly enlarged to left. Blood pressure 112-130. Albumin, casts and blood in urine. Lungs: Normal. Clinical diagnosis: Chronic nephritis; chronic tonsillitis.	98	July, 1913. Frequent attacks tonsillitis. Chronic nephritis. Hyperthyroidism.	None.	Oct., 1915. Not improved. Had uræmia in summer of 1915. No evidence of tuberculosis of lungs or kidneys. Has been under constant treatment for nephritis. No colds or sore throat since tonsillectomy. Aug., 1916. No symptoms of tuberculosis in glands neck, lungs or kidneys. Still has albumin, hyaline and granular casts.
No general glandular enlargement. Lungs: Impairment of percussion note at right apex; also of expansion on right. X-ray: Shows evidence of old lesion on right. No tbc. bacilli in sputum. Never any cough or night-sweats. Calmette 1% positive. Heart and urine: Normal. W. B. C.: 10,000. Hb.: 70%.	98.6	Nov., 1913. Tbc. glands neck left. Chronic tonsillitis. (Local curettage of sinus on left side neck.)	None.	Nov., 1914. Sinus healed 6 months after tonsillectomy; mass of glands on left much smaller. Has gained 12 pounds. Has had no colds or sore throats since operation. Dec., 1915. No palpable enlarged glands on left side neck. No colds since operation. Is still under weight about 15 pounds. June, 1916. After a coryza and pharyngitis glands left side neck again enlarged; sinus reopened. Excision glands neck. Lungs as before.
No general glandular enlargement. Lungs: Normal on perc. and ausc. Heart: Normal. Urine: Normal.	98	Dec., 1913. Frequent colds. Chronic tonsillitis. Frequent attacks laryngitis. (Nasal operation also.)	None.	Dec., 1915 (2 years after operation). Has been studying in post-graduate work since operation; no symptoms of pulmonary or glandular Tbc. General health good. Lungs normal.
No general glandular enlargement. Lungs: Normal on perc. and ausc. Heart: Systolic murmur transmitted to axilla and back. Urine: Trace albumin. Few W. B. C.; no casts.	98.6	May, 1914. Tbc. glands neck right. Frequent attacks tonsillitis. Mitral insufficiency. (Excision tbc. glands neck on right side.)	None.	Feb., 1916 (nearly 2 years after operation). Had an attack of pleurisy in Dec., 1915. Two enlarged glands (tuberculous) at angle of jaw on left, and a recurrence about mid-way the sternomastoid on the right. Throat looks normal; nasopharynx normal; nose and ears normal.
No general glandular enlargement. Lungs: Normal on perc. and ausc. Heart: Normal. Kidneys: Normal.	99.2	June, 1914. Enlarged glands neck. History tonsillitis.	None.	Feb., 1916. Glands at angle of jaw on left are not palpable; still enlarged at angle of jaw on right, measures 2 x 3 cm. General health good. Lungs clear on perc. and ausc. Temperature normal.

TABLE I.—SUMMARY OF CASES OF TUBERCULOSIS OF THE TONSILS OR ADENOIDS

IV. Cases between 16 and 25 Years of Age.—Continued.

Name. Surg. No. Sex.	Race.	Age.	Occupation.	Special Examination. Tonsils, Adenoids, Teeth, Nose, Ears.	Microscopical Examination. Tbc. R. Tonsil.	Tbc. L. Tonsil.	Tbc. Adenoids.	Glands. Size, Situation, Character.	History.
N. S. 35504. Female. 39.	W	23	Factory work.	Tonsils: Small; adherent to pillars, especially right. Adenoids: Very small amount. Teeth: Carious; alveolar infections. Nose: Normal. Ears: Normal.	+	0	0	Mass of glands at angle jaw on right; fluctuate; not tender; marked periadenitis. Definitely enlarged, hard, discrete glands on left and in both posterior triangles.	Enlarged glands at angle jaw on right first noted 4 months ago following typhoid fever. Never pained. Have gradually increased in size. No history of Tbc. in family. No history tonsillitis; no cough.
H. C. 36205. Female. 40.	C	18	Maid.	Tonsils: Slightly enlarged; adherent to pillars. Adenoids: Not enlarged. Teeth: Carious. Nose: Normal. Ears: Normal.	0	+		Glands of neck not enlarged. Few palpable glands in submaxillary triangle; due to teeth.	Chief complaint is pain and stiffness of joints. Began about one month after attack acute tonsillitis in July, 1914. Since this time has walked with cane. Also shortness of breath on exertion. Frequent attacks tonsillitis. Has been in hospital on two previous occasions for treatment of joints. Attacks "fluttering of heart."
F. W. 38659. Female. 41.	C	19	Maid.	Tonsils: Right larger than left. Both embedded and adherent to pillars. Adenoids: Enlarged. Teeth: Pyorrhœa; caries. Ears: Chronic catarrhal otitis media. Nose: Hypert. inf. turb.	0	+	+	Mass glands angle jaw left 6 x 4 cm.; matted together; fluctuate. Tbc. glands, right, have been removed.	Frequent attacks tonsillitis. Gives no history of cough, sweating at night or loss of weight. Tbc. glands have been removed on right; recently glands on left have rapidly enlarged. No history pleurisy.
A. H. 38740. Female. 42.	W	22	Factory.	Tonsils: Right larger than left; both embedded and adherent to pillars. Adenoids: Enlarged. Teeth: Caries. Ears: Normal. Nose: Hypert. middle and inf. turbinates.	0	0	+	Tbc. glands neck on right removed 5 years ago. At present glands at angle jaw on each side 1 x 2 cm. in diameter; slightly matted together; not adherent to skin; hard.	Frequent tonsillitis. History night-sweats, but no chronic cough. Glands neck at times become greatly enlarged and then almost completely disappear.
F. W. 31348. Male. 43.	W	29	Manufacturer.	Tonsils: Enlarged; densely adherent to pillars. Adenoids: Enlarged. Nose: Hypert. inf. turb. left. Ears: Normal. Teeth: Good. Marked iritis.	0	0	+	Has had two operations for tbc. glands neck. At present recurrence in anterior triangle on left, and posterior triangle on right. On left mass at angle jaw typical tbc. glands.	Onset enlarged glands about 5 years ago. Operation on right 4 years ago; on left 3½ years ago. For past 3 months has had double iritis. No symptoms of pulmonary lesion at present. Mother died Tbc. when patient was 4 years of age. Had right pleural effusion at 14 years of age. Hay fever for years. Frequent attacks tonsillitis.
J. M. 34742. Female. 44.	W	27	Housework.	Tonsils: Not enlarged; adherent to pillars. Adenoids: Not enlarged. Ears: Normal. Nose: Hypert. inf. turb. Teeth: Good.	+	+	0	Enlarged glands at angle of jaw on both sides. Not adherent; freely movable; measure 2 x 3 cm. on both sides.	No history of Tbc. in family. Chief complaint is frequent sore throats; almost constantly for past 3 months. Had not noticed enlarged glands neck. General health good. No cough.
L. R. 35203. Male. 45.	W	31	Merchant.	Tonsils: Both enlarged; left beyond mid-line. Adenoids: Large mass. Ears: Normal. Teeth: Good. Nose: Normal.	0	+	0	Very stout man. No glands palpable.	No history Tbc. in family. Measles, mumps, pertussis, varicella, typhoid fever. Chief complaint is: Chronic hacking cough; febrile attacks at irregular intervals; digestive disturbances; and rheumatism. Frequent attacks tonsillitis.
O. S. 35291. Male. 46.	W	34	Laborer.	Tonsils: Slightly enlarged; adherent; chronically infected. Adenoids: Small amount. Teeth: Pyorrhea. Ears: Normal. Nose: Hypert. inf. turbinates; deflected septum.	+	+	0	A chain of slightly enlarged tender glands in both anterior and posterior triangles. At angles of jaw measure 3 x 2 cm.; no periadenitis; movable.	No history of Tbc. in family. Complains of nasal obstruction; catarrhal discharge into throat; almost constant sore throat for past 2 months. Frequent attacks tonsillitis. Frequent attacks laryngitis.

TABLE II.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR INFECTIOUS ARTHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
G. B. 29157. Female.	W	26	Nurse.	Tonsillitis every winter for several years. Complains of stiffness in practically all joints, but elbows and ankles are particularly stiff and painful. Onset joint trouble insidious; no history of swelling or redness of joints. This was history given in 1912. In 1914 had severe attack tonsillitis with albumin and blood in urine; flare up of arthritis in all joints.	None.	Tonsils: Enlarged; adherent to pillars. Nose: Normal. Sinuses: Not infected. Ears: Normal. Nasopharynx: Small amount adenoid tissue; chronically infected. Teeth: Good. Cervical glands: Enlarged at angles jaw and in posterior triangles.	98.6
F. N. 29950. Male.	W	24	Farmer.	No history tonsillitis. Onset 1½ year ago left foot, ankle, right hip. Bony exostosis on os calcis left.	None.	Tonsils: Enlarged. Adenoids: Small. Sinuses: Clear. Teeth: Good. Cervical glands: Enlarged at angles jaw.	
M. B. 29965. Female.	W	25	Nurse.	Frequent tonsillitis, but without constitutional symptoms until last attack 1 month ago; this was followed by stiffness and pain in both knees, and the artic. of jaw on right. Has difficulty in walking or eating. Onset of joint symptoms about 1 week after tonsillitis.	None.	Tonsils: Slightly enlarged; very adherent to pillars. Nose: Normal aside from hypert. inf. turb. Ears: Normal. Sinuses: Not infected. Teeth: Good. Nasopharynx: Chronically infected; discharge. Cervical glands: Enlarged; tender.	99

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

IV. CASES BETWEEN 16 AND 25 YEARS OF AGE.—Continued.

General Physical Examination. Tuberculin Test.	Temp. (Mouth) on Day Before Operation. ° F.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
No general glandular enlargement. Lungs: Normal on perc. and ausc. Heart: Normal. Urine: Normal. Calmette 1% positive. W. B. C.: 12,000. Hb.: 92%.	98	Oct., 1914. Tbc. glands neck right. (Incision and curettage tbc. glands on right.) Tuberculin treatment advised. Referred to dentist.	None.	July, 1915 (9 months after operation). Has not been returning for tuberculin treatment. Large mass tbc. glands on right side neck discharging in two places. On the left only one small gland is palpable. Teeth poor; has not been to dental clinic. Throat looks normal with the exception of a granular pharyngitis. Lungs: Slight impairment at right apex; few râles after coughing. X-ray chest (30904) shows marked infiltration of both lungs; shadow at right of sternum, possibly enlarged glands.
Lungs: Clear on perc. and ausc. Heart: Enlarged to left; def. mitral insufficiency. W. B. C.: 10,700. Hb.: 79%. Urine: Normal.	98.6	Jan., 1915. Infectious arthritis. Mitral insufficiency.	None.	June, 1915 (6 months after operation). No symptoms of Tbc. Glands not enlarged. Lungs clear on perc. and ausc. Temperature normal. The joints gradually improved, and for two months have been normal. Throat looks normal. Pulse regular; heart measures 11.5 cm. to left and 4 cm. to right. Definite mitral insufficiency. Liver not enlarged. No longer has attacks of tachycardia.
General glandular enlargement. Heart: Normal. Lungs: Thickened pleura; sputum negative. Urine: Normal. Wassermann: Positive. Calmette 1% negative. Calmette 5% doubtful.	99.1	Dec., 1915. Chronic tonsillitis. Cervical adenitis Tbc. (Extraction carious teeth. Treatment for lues.)	None.	Aug., 1916. General condition poor. Now evidence of active tuberculosis at left apex. Sinus just above clavicle on left from mass of tuberculous glands. Wassermann still positive. Temperature 98° F.
General glandular enlargement. Heart: Normal. Lungs: Clear on perc. and ausc. Urine: Normal.	98.9	Jan., 1916. Chronic tonsillitis. Cervical adenitis. (Extraction carious teeth.)	None.	Sept., 1916. General health good. Temperature 98.7° F.; pulse 88; weight 135 pounds. Is 3 months pregnant. Cervical glands smaller than at time of operation; hard, freely movable. Lungs clear on physical examination. Skin test positive. At present has an acute antrum infection on right.
No general glandular enlargement. Lungs: Impaired percussion note over right lower back; no râles. X-ray: Thickened pleura right upper lobe. Infiltration both lungs. Tbc. skin test: Positive. Heart: Normal. Kidneys: Normal.	99	Jan., 1913. Tbc. glands neck. Recurrent after operation. (Incision and drainage tbc. abscess neck left.)	None.	July, 1913. Glands on left again enlarged and now discharging. One eye still inflamed. Has been taking tuberculin treatment. Jan., 1916. Glands on left almost entirely disappeared; on right are barely palpable. Eyes not normal, but much improved. Still takes occasional course of tuberculin.
No general glandular enlargement. Lungs: Clear on perc. and ausc. Heart: Normal. Urine: Normal. Skin test: Positive. Calmette: Positive.	99.2	June, 1914. Frequent attacks tonsillitis. Enlarged cervical glands. (Nasal operation also.)	None.	Nov., 1914. General health good; no cough; no sore throat since operation. Glands neck not palpable on either side. Dec., 1914. Lungs: Slight impairment at right apex; few râles after coughing. General health good. Temperature normal. Is working regularly. Tbc. skin test positive; Calmette 1% positive. Throat and nasopharynx look normal. July, 1916. General health good during past 2 years; working regularly. No sore throats. There is a solitary gland at angle of jaw on right measuring 3 x 4 cm.; hard, movable, not tender. Has come gradually during past 7 or 8 months. Condition of lungs unchanged. Temperature normal. To enter hospital for removal enlarged gland on right. Oct., 1916. Caseous glands at angle jaw on right removed. To have tuberculin treatment.
Lungs: Clear on perc. and ausc. Heart: Normal. Urine: Normal.	99	Sept., 1914. Frequent attacks tonsillitis. Infectious arthritis. (Removal pigmented mole on chest.)	None.	Jan., 1916. In perfect health. Since discovery of tbc. tonsils has had repeated examinations of lungs and sputum; always negative. No palpable glands. No febrile attacks and no arthritis during past year. Temperature normal. Sept., 1916. No glandular enlargement. No symptoms of pulmonary or glandular tuberculosis. General health excellent.
Lungs: Clear on perc. and ausc. Heart: Normal. Urine: Normal. No general glandular enlargement.	99	Sept., 1914. Enlarged cervical glands. Frequent tonsillitis. Frequent laryngitis. (Nasal operation also.) (Referred to dentist.)	None.	Nov., 1915 (over 1 year after operation). General health excellent. No sore throat or laryngitis since operation. Teeth are in good condition. Glands neck barely palpable on both sides; not tender. Throat, nasopharynx and nose look normal. Lungs: No definite changes on physical examination. Oct., 1916. Has a definite pulmonary tuberculosis; sent to a sanatorium for treatment. Throat looks normal. Glands: Just palpable at angle jaw.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
No general glandular enlargement. Lungs: Clear on perc. and ausc. Heart: Normal. Urine: (in 1912), normal; (in 1914), albumin; blood; no casts. Joints: Periarticular thickening; no redness; no fluid in capsule. X-ray: Only periarticular changes.	Sept., 1915. Frequent tonsillitis. Arthritis infections. Renal lesion. (Was first admitted in Jan., 1912, complaining of arthritis; refused operation at this time.)	None.	July, 1916. The stiffness and pain in joints has all cleared up; had one severe coryza and pharyngitis last winter without any associated joint symptoms. Urine: Normal.
General glandular enlargement. Heart and lungs: Normal. Secondary anaemia; no leucocytosis. W. B. C.: 5500. Hb.: 75%.	May, 1912. Chronic tonsillitis. Arthritis.	None.	June, 1915. Writes that joints began to improve after tonsil operation and "for the past 2 years have been normal."
Slight general glandular enlargement. Lungs: Normal. Heart: Normal. Urine: Normal. Joints: No redness; no fluid; periarticular infiltration.	May, 1912. Frequent tonsillitis. Arthritis infections. (Nasal operation also.)	None.	Feb., 1916 (nearly 4 years since tonsillectomy). No joint symptoms of any kind for the past 3 years. General health excellent. Has had only one severe coryza in past 4 years. Cervical glands not palpable on either side; no general glandular enlargement.

TABLE II.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR INFECTIOUS ARTHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
S. D. 29968. Female.	W	35	Housewife.	Frequent attacks tonsillitis since childhood, but no arthritis until 2 months ago. Onset with sore throat, fever, chill, anorexia, constipation and polyarthritis.	None.	Tonsils: Very large; crypts filled with mucopurulent material. Nose: Normal. Sinuses not infected. Ears: Normal. Teeth: Carious; pyorrhea. Nasopharynx: Small amount adenoids. Cervical glands: Enlarged; tender.	100
H. D. 31131. Male.	W	23	Student.	History frequent sore throats; never any joint symptoms till Oct., 1912. Followed severe tonsillitis at this time with stiffness in all joints; the shoulders, knees and feet were more involved than other joints. These joint symptoms first came on about two weeks after tonsillitis; slowly subsided. In Dec., 1912, had very acute attack polyarthritis; was unable to move without pain. Temperature 99-103°.	None.	Tonsils: Enlarged; adherent to pillars. Teeth: Good condition. Nose: Normal; no sinus infection. Ears: Normal. Nasopharynx: Small amount adenoids; chronically infected. Cervical glands: Enlarged; soft; tender in both anterior and posterior triangles.	98.6
K. K. 31862. Male.	W	31	Golf instructor.	After getting wet about one year ago had first attack tonsillitis that he remembers since childhood. Following this had pain and stiffness in shoulders. For past 6 months almost constant sore throat; shoulders and fingers now very stiff and painful; other joints not involved. Gonorrhea 4 months ago; was treated.	None.	Tonsils: Small; adherent to pillars; much scar tissue. Teeth: Poor; many carious. Nose: Normal; sinuses not infected. Nasopharynx: Chronically infected adenoids; discharge. Ears: Normal. Cervical glands: Enlarged in anterior and posterior triangles.	98.6
L. C. 31970. Female.	W	37	Housewife.	Sore throats or colds are infrequent. Onset polyarthritis 7 or 8 weeks ago; pain and swelling, but no redness, in knees, shoulders, wrists, elbows and fingers of both hands. Thinks she has had no fever. Since onset arthritis has had an attack tonsillitis. Frontal headache attacks for years. Discharge in nasopharynx for years.	None.	Tonsils: Enlarged; adherent; purulent material in some crypts. Nose: Hypert. both inf. and left mid. turb.; large septal spur left. Ethmoiditis. Ears: Chronic catarrhal otitis media double. Teeth: Many carious. Nasopharynx: Chronically infected; discharge from nose. Cervical glands: Enlarged on right; just palpable in other triangles.	98.2
C. O. 32697. Male.	W	6		Frequent sore throat. A diffuse erythematous rash for past 6 months. Pain and stiffness in all joints; never any joint swelling or redness. Frequent elevation of temperature to 103.	None.	Tonsils: Large; adherent. Nose: Discharge due to adenoids; otherwise normal. X-ray: Sinuses clear. Ears: Normal. Nasopharynx: Small amount adenoid; infected; chronic discharge. Teeth: Carious. Cervical glands: Enlarged in all triangles.	98.2
C. H. 32981. Male.	W	27	Blacksmith.	Infrequent sore throat and coryza. Onset 1 year ago with pain in left ankle; then became swollen. Other joints were successively involved, walks with difficulty. Unable to work. No digestive disturbances. No history lues or tripper.	None.	Tonsils: Small; adherent; probably infected secondarily by teeth. Nose: Hypert. inf. turb.; no sinus infection. Teeth—X-ray: Abscess at root wisdom tooth. Extensive pyorrhea. Nasopharynx: Small amount adenoid tissue. Ears: Normal. Cervical glands: Barely palpable.	99
U. P. 33149. Female.	W	13	School.	Frequent tonsillitis; nasal discharge. Stiffness of cervical and dorsal spine, hips, knees, fingers. Onset gradual several years ago. Was always frail and underdeveloped.	None.	Tonsils: Not enlarged; adherent to pillars. Nose: Discharge due to adenoids; no sinusitis. Ears: Drums intact; hearing good. Nasopharynx: Infected adenoids. Cervical glands: Enlarged; hard—in all triangles. Teeth: Good.	99
L. S. 33278. Female.	W	9	School.	No history sore throat or frequent colds. Not a mouth-breather. Swollen ankles, wrists, small joints fingers, and stiff spine for 18 months. Onset gradual. No fever. Marked muscular wasting.	Mitral insufficiency.	Tonsils: Small; embedded; adherent to pillars; chronic pharyngitis. Teeth: Fairly good; some caries. Ears: Normal. Nose: Discharge from adenoids; otherwise normal. Nasopharynx: Infected adenoids; discharge. Cervical glands: Very large in both anterior and posterior triangles.	
R. C. 33657. Female.	W	32	Housewife.	Repeated attacks quinsy. Arthritis began 4 years ago in arms following tonsillitis; involved knees, elbows and fingers 6 months later. Discharge in nasopharynx. Hay fever for 10 years.	None.	Tonsils: Enlarged; much scarring due to quinsies. Nose: Ethmoiditis and antrum infection left. Teeth: No root infection (X-ray). Nasopharynx: Chronically infected adenoids. Ears: Normal. Cervical glands: Enlarged at angles jaw; just palpable in posterior triangles.	99.3
R. H. 34716. Male.	W	29	Student.	Frequent attacks pharyngitis during latter part 1913. In Dec., 1913, had a severe attack tonsillitis; two weeks later first joint symptoms. First left ankle, then right ankle and fingers. Slight swelling; stiffness; pain on motion.	None.	Tonsils: Both small; densely adherent; fibrous; marked hypertrophic pharyngitis. Nose: Hypert. inf. turb. right; sinuses clear. Ears: Normal. Teeth: Good. Nasopharynx: Chronically infected adenoids; discharge. Cervical glands: Enlarged and tender in anterior triangles, especially on left; chain of slightly enlarged glands in each posterior triangle.	98.4
G. D. 34731. Female.	W	25	Housewife.	No severe tonsillitis attack for many years, but dryness, slight pain on swallowing and uncomfortable sensations in throat in A. M. for several months. For the past 6 months pain and stiffness in neck, both feet, the right shoulder and left ankle. Never swollen or red; painful to walk. Complains enlargement, and at times, painful glands in neck.	None.	Tonsils: Small; densely adherent to pillars. Nose: Septal deviation to right. Sinuses clear. Ears: Normal. Teeth: Good. Nasopharynx: Very small amount adenoid. Cervical glands: Enlarged at angle jaw on both sides; measure about 3 x 5 cm. Smaller glands in posterior triangles.	99

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Lungs: Normal. Heart: Soft systolic blow at apex; not transmitted to axilla; not enlarged. Blood culture: Negative. Urine: Normal. Joints: Fingers, knees, ankles swollen; not red; very painful on motion. Unable to walk for 2 months.	June, 1912. Frequent tonsillitis. Arthritis, infectious. (Extraction carious teeth.)	None.	Aug., 1915. After leaving hospital improvement was gradual. About 6 months after operation all joint symptoms had disappeared, and have never recurred. No sore throat since operation. General health good. Cervical glands not palpable on either side in anterior triangle; few small glands in posterior triangles. Teeth: In poor condition. Throat and nasopharynx look normal with exception of a chronic hypertrophic pharyngitis. Nose: Normal. Heart: Normal in size; sounds clear.
General glandular enlargement. Lungs: Normal. Heart: Soft systolic blow at apex; not transmitted. Blood culture negative. Urine: Normal. Joints: Very painful on slight motion; knees are much swollen. (Was brought to hospital in ambulance.) Urethra: Normal. W. B. C.: 15,000. Hb.: 75%.	Dec., 1912. Frequent tonsillitis. Arthritis, infectious.	Bleeding on 3d and again on 4th day after operation.	Jan., 1913. Joints rapidly cleared up after leaving hospital. Can now walk without pain; still some stiffness and swelling. Dec., 1915 (3 years after operation). Joints have been normal for past 2½ years. Has had no sore throats. Glands neck, axillæ, groins, not enlarged. Throat looks normal aside from hypertrophic pharyngitis (smoking).
Slight general glandular enlargement. Lungs: Normal. Heart: Normal. Urine: Normal. Urethra: Negative for gonococcus. Joints: No swelling; limitation of motion; pain on motion. X-ray: Only periarticular changes.	April, 1913. Chronic tonsillitis. Chronic nasopharyngitis. Arthritis, infectious. (Referred to dentist.)	None.	May, 1913. No improvement in joint condition. Glands neck still enlarged. April, 1914. Recurrence of stiffness and pain in shoulders and fingers in Jan., 1914; cleared up after 3 weks; now normal. Before this attack joints had been normal for 6 months. Cervical glands not palpable. Teeth in good shape. June, 1915. Joints all perfectly normal for over a year. Has recently won the golf championship for Canada.
No general glandular enlargement. Heart: Normal. Lungs: Impairment behind over left apex; râles. Sputum: No Tbc. bacilli. Urine: Albumin trace; R. B. C. and W. B. C.; no casts. W. B. C.: 14,000 Hb.: 78%. No gonococci found.	April, 1913. Chronic tonsillitis. Infectious arthritis. Ethmoiditis. (Also nasal operation and referred to dentist.)	None.	Aug., 1915 (over 2 years after operation). The pain and stiffness in knees and shoulders have entirely cleared up; still has occasional swelling and stiffness of elbows. All other joints normal. No new joints were involved after the operation on tonsils and nose. The improvement in condition of joints was very gradual; no symptoms in knees and shoulders for 1 year. Glands: Not palpable in either anterior or posterior triangles. Teeth: In good condition. Throat: Normal; no pharyngitis; no discharge from nose. Nose: Good breathing space; no discharge; no polypi. Headaches much less frequent and less severe.
Marked general glandular enlargement. Heart and lungs: Normal. Urine: Normal. W. B. C.: 12,000. Spleen: Palpable. (Culture from tonsils after excision—streptococcus.)	Aug., 1913. Erythema multiforme. Pain and stiffness joints. Elevated temperature two or three times a week to 103° F. Frequent tonsillitis. (Extraction carious teeth.)	None.	Aug., 1915 (2 years after operation). History is that child has been entirely well since tonsillectomy. No recurrence of erythema, rheumatism, tonsillitis or elevation of temperature. Glands: Left anterior cervical triangle about ½ cm. in diameter; just felt in other triangles; just palpable in axillæ and groin. Spleen: Not palpable. Teeth: Several carious. Nose, ears, throat, all look normal.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal. R. B. C.: 4,600,000. W. B. C.: 7000. Hb.: 90%. No gonococci found. Wassermann: Negative.	Oct., 1913. Infectious arthritis. (Extraction abscessed tooth; referred for treatment pyorrhea; nasal operation.)	None.	June, 1915. Since leaving hospital has had several acute attacks polyarthritis; new joints have become involved; spine stiff. Unable to work. Has had no colds or sore throats. X-ray teeth shows no abscesses at root; still has pyorrhea. Heart: Normal. Nov., 1916. Much improved since removal of all teeth about two years ago. Works regularly as machinist for past 1½ years. Good movement in all joints; no deformity. Still some swelling of one of small joints index finger left hand. Weight 144 pounds. Nose and throat look normal. Heart normal.
Slight general glandular enlargement. Heart and lungs: Normal. Urine: Normal. W. B. C.: 7000. Hb.: 95%. No urethritis. Joints: X-ray shows some new bone formation d. spine, and around affected joints. Weight: 50 pounds.	Oct., 1913. Frequent tonsillitis. Cervical adenitis. Infectious arthritis.	None.	June, 1915. Has gained over 50 pounds in weight. Joints much improved though still quite stiff. No new joints involved. Cervical glands not palpable. General health better than ever before.
Marked general glandular enlargement. Spleen palpable—enlarged. Lungs: Clear on perc. and ausc. Urine: Normal. (Culture from tonsils after removal—staphylococci.)	Nov., 1913. Infected tonsils. Infected adenoids. General adenitis. Arthritis.	None.	May, 1914. Joints improved; right hip has become involved. Glands neck, groin, axillæ, epitrochlears enlarged. Spleen palpable. June, 1915. No pain in any of joints at present; all stiff. Goes to school regularly for past year. Nose and throat look normal aside from hypertrophic pharyngitis. Glands still enlarged though smaller. Teeth carious. Nov., 1916. Joints still stiff at times. No new joints involved. Goes to school regularly.
Glands in groin and axillæ enlarged. Heart and lungs: Normal. Urine: Normal. No urethritis. W. B. C.: 8000. Hb.: 90%. Wassermann: Negative.	Jan., 1914. Chronic tonsillitis. Arthritis, infectious. (Nasal operation.)	None.	June, 1915. Reports no improvement in condition of joints. No new joints involved. No tonsillitis or colds since operation. Still some nasal discharge. (Advised another nasal operation for ethmoiditis.)
Slight general glandular enlargement. Heart and lungs: Normal. Urine: Normal. Wassermann: Negative. No urethritis.	June, 1914. Chronic tonsillitis. Arthritis, infectious.	None.	Nov., 1915. General health much improved since removal of tonsils; weighs 15 pounds more than ever before. One attack laryngitis in Jan., 1915, but otherwise no sore throats or colds. After the operation the joints gradually improved, but it was 6 months before the stiffness entirely disappeared; since Jan., 1914, have been entirely normal. No new joints were ever involved after the tonsillectomy.
General glandular enlargement. Heart and lungs: Normal. Urine: Normal. Wassermann: Negative. No urethritis. Digestive tract normal, aside from constipation.	June, 1914. Chronic tonsillitis. Arthritis, infectious.	None.	July, 1915. General health much better during past year. No general glandular enlargement; cervical glands not palpable. Throat feels normal. All joints have been normal for about 8 or 9 months. Has gained 15 pounds in weight.

TABLE II.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR INFECTIOUS ARTHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
R. S. 34733. Female.	W	27	Student.	Tonsillitis 2 years ago followed by arthritis in one knee and one elbow. No swelling but tenderness and stiffness. These joints have never entirely returned to normal. Worse following cold about 3 months ago.	None.	Tonsils: Small; adherent, particularly on rt. Nose: Normal; sinuses clear. Ears: Normal. Teeth: Good. Nasopharynx: Large mass adenoids. Cervical glands: Enlarged at angle jaw on right. Measure 3 x 5 cm. Slightly enlarged on left and in posterior triangles.	99
R. A. 34893. Female.	W	13	School.	Complains of almost constant "cold" in head, and frequent sore throat. Headache daily. For several months has had swelling, pain, stiffness in left ankle, right arm and shoulder, and fingers.	None.	Tonsils: Have been partially removed; remains covered with scar tissue. Nose: Marked septal deflection to right; evidence of ethmoiditis on right. Ears: Normal. Teeth: Very bad condition; carious; abscess. Nasopharynx: Small amount adenoids; chronically infected. Cervical glands: Much enlarged at angle jaw on both sides.	99.4
C. B. 35252. Female.	W	22	Student.	Sore throat and colds very infrequent. Arthritis at intervals all her life. After exposure to cold 6 months ago joints became much worse; ankles, knees, fingers are involved. Swollen, painful, never red. No history of fever. Onset arthritis insidious.	None.	Tonsils: Very small; fibrous; adherent to pillars. Nose: Hypert. inf. turb. causing obstruction. Sinuses not infected (X-ray). Ears: Normal. Teeth: X-ray shows abscess at root of upper and lower incisors. Nasopharynx: Discharge from nose posteriorly; chronic infection adenoids. Cervical glands: Enlarged (2 x 3 cm.) at angle jaw on right; just palpable in other triangles.	98.2
A. C. 35256. Female.	W	52	Cleaner.	Frequent sore throat since childhood; quinsy. Knees and ankles swollen and painful for 1 year. Unable to work most of time on account of difficulty in walking. Referred from Gynecological Department.	None.	Tonsils: Small, fibrous, adherent. Nose: Hypert. inf. turb.; otherwise normal. Teeth: All removed. Ears: Normal. Nasopharynx: Infected adenoids; discharge from posterior nares. Cervical glands: Not enlarged, but palpable in all triangles.	98
W. H. H. 35427. Male.	W	53	Lawyer.	History frequent tonsillitis all his life. Arthritis began in right knee 4 years ago; swelling; no redness; pain on walking. Joints always worse after every coryza. Since last tonsillitis 1 month ago the right shoulder is involved.	None.	Tonsils: Small, fibrous, densely adherent. Nose: Inf. turb. greatly hypert.; no sinus infection. Ears: Normal. Teeth: Extensive pyorrhea. Nasopharynx: Discharge from posterior nares. Cervical glands: Enlarged and tender at angles jaw, especially on right. Neck is frequently stiff.	98.4
M. K. 35836. Female.	W	23	Housewife.	Tonsillitis once or twice every winter for years; quinsy three times. For 3 years has had pain, stiffness, swelling of elbows, knees and ankles. No history rheumatic fever.	None.	Tonsils: Enlarged; much scar tissue. Nose: Normal. Teeth: Good. Ears: Normal. Nasopharynx: Small amount adenoid. Cervical glands: Not enlarged but palpable at angles of jaws and posterior triangles.	99.2
A. G. 33073. Female.	C	35	Cook.	Frequent tonsillitis. Almost constant sore throat for 2 months. Both shoulders stiff and painful. Unable to work.	None.	Tonsils: Embedded; small; adherent. Adenoids: Small; infected. Teeth: Good. Sinuses: Not infected. Cervical glands: Slightly enlarged; tender.	98.2
W. S. 33814. Male.	W	29	Laborer.	Frequent tonsillitis for past 3 years; with each attack has pain and stiffness in practically all large joints. Is just recovering from an attack.	None.	Tonsils: Left larger than right; both adherent. Adenoids: Small. Teeth: Good. Sinuses: Not infected. Cervical glands: Enlarged; especially left.	98
H. C. 36143. Female.	W	16	Clerk.	Frequent tonsillitis. Arthritis began 1 year ago in knees and ankles; clears up and recurs with every cold. Severe attack 1 month ago.	None.	Tonsils: Enlarged, both sides. Adenoids: Small; chronically infected. Teeth: Carious. Sinuses: Not infected. Cervical glands: Enlarged and tender angles jaw.	99.2
L. C. 36637. Male.	W	11	School.	Tonsillitis frequent past 3 years. Arthritis for 2 years; the shoulders and knees involved. Arthritis always associated with sore throat. No chorea.	None.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious. Sinuses: Not infected. Cervical glands: Enlarged angles jaw both sides.	98.5
M. P. 36768. Female.	W	15	School.	Occasional sore throat; never severe. First came to Orthopedic Dispensary 1907 with arthritis in ankles and knees. Another attack in 1914, and a third attack about 1 month ago. Hands, shoulders, knees involved. Walks with difficulty. No other illness.	None.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Good. Sinuses: Not infected. Cerv. glands: Slightly enlarged at angles jaw.	98
A. W. 37245. Female.	C	25	Maid.	Referred from Orthopedic Department where she has been treated for infectious arthritis. Frequent tonsillitis since childhood. Wrists, fingers, back and knees involved. Frequent frontal headache.	Mitral insufficiency.	Tonsils: Slightly enlarged; very adherent to pillars. Adenoids: Small; infected. Teeth: Carious. Sinuses: Not infected. Cervical glands: Enlarged angles jaw.	99
E. C. 37312. Female.	C	9	School.	Frequent tonsillitis with high fever. Swelling glands neck. Onset arthritis 2 years ago after sore throat; all joints in arms and hands were involved; fingers still stiff and painful. Recently knees involved.	None.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Carious. Sinuses: Not infected. Cervical glands: Size walnuts angles jaw. Ears: Chronic supp. otitis media.	99
W. C. 37499. Male.	W	8		Frequent acute sore throats; constant "cold in head." Arthritis for over one year; knees and ankles swollen, stiff, painful. Walks with difficulty.	None.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious. Sinuses: Not infected. Cervical glands: Enlarged angles jaw.	99
O. T. 37630. Male.	W	3		Unable to walk on account swelling and pain in ankles and knees. "Always worse after colds." Arthritis came on 2 weeks after tonsillitis.	None.	Tonsils: Slightly enlarged; adherent to pillars. Adenoids: Large mass. Teeth: Good. Sinuses: Not infected (X-ray). Cerv. glands: Slightly enlarged at angles jaw.	99.6

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal.	June, 1914. Chronic tonsillitis. Cervical adenitis right. Arthritis, infectious.	None.	June, 1915. Has had no pain or stiffness in joints during past 8 months. Skin is much clearer. General health improved. Had one slight "cold" last winter instead of the usual half dozen. Cervical glands not palpable on either side.
General glandular enlargement. Heart and lungs: Normal. Urine: Normal.	July, 1914. Chronic tonsillitis. (Tonsils have been partially removed.) Arthritis, infectious. Cervical adenitis. (Extraction carious teeth.)	None.	Jan., 1915. No change in arthritic condition; polypoid m. m. anterior end middle turb. rt.; discharge. Refuses operation on sinuses. July, 1915. Joints still stiff; right hip has become involved. Frequent headaches. Ethmoiditis right; discharge into nasopharynx. Cervical glands are not palpable in the anterior triangles; not enlarged in posterior triangles. Again refused nasal operation. Heart normal. Note.—The chronic tonsillitis in this case was probably secondary to the ethmoidal infection and the nasal operation should have been done first.
No general glandular enlargement. Heart and lungs: Negative. Urine: Normal. W. B. C.: 10,000. Hb.: 85%. No urethritis. Wassermann: Negative.	Sept., 1914. Chronic tonsillitis. Arthritis, infectious. (Nasal operation also.)	None.	Nov., 1914. All joint symptoms rapidly cleared up after leaving hospital; is at present entirely free from stiffness or pain. Feb., 1916. Recurrence of acute polyarthritis in Dec., 1914; not associated with cold or other trouble of any kind. All joints were involved in succession. Very slight if any fever. Heart normal. Has had osteopathic treatment. Spent several months at Hot Springs, Ark., and Mt. Clemens, Mich., without any benefit. At present in worse condition than ever before.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal. No urethritis. Wassermann: Negative.	Sept., 1914. Frequent tonsillitis. Arthritis, infectious.	None.	Oct., 1914. Joints rapidly improved after operation; for a few days were more swollen and painful than before, but at the end of a week the swelling and pain on motion rapidly disappeared. Can now walk and work without pain for first time in 6 months. Aug., 1915. All joints practically normal for a year; works regularly. Glands not palpable in neck. Nose and throat normal.
No general glandular enlargement. Heart, lungs: Normal. Urine: Normal. Blood pressure 175 mm. Hg. Wassermann: Negative. No urethritis. Circumference right knee 41½ cm. X-ray: Shows only periarticular changes; cartilage not injured.	Oct., 1914. Chronic tonsillitis. Arthritis, infectious. (Nasal operation also. Referred for treatment of pyorrhea.)	None.	Nov., 1914. Swelling knees slightly increased; very difficult to walk. Jan., 1915. No improvement in condition of joints. Cervical glands much smaller. Throat looks normal. Nose normal. June, 1915. Other joints becoming involved. Teeth have been treated. Throat normal. No gastro-intestinal symptoms. Aug., 1916. Much improved. Very little, if any swelling of knees, but "the stiffness and soreness of elbows and knees is felt very acutely during damp weather." Other joints normal. General health good.
Slight general glandular enlargement. Heart and lungs: Normal. Urine: Normal. No urethritis. Wassermann: Negative. R. B. C.: 4,900,000. W. B. C.: 10,700. Hb.: 60%.	Dec., 1914. Chronic tonsillitis. Arthritis, infectious.	None.	June, 1915. All joints are now normal for the first time in 3 years; no symptoms for past 4 months. Glands in anterior and posterior triangles are not palpable. Throat looks and feels normal. Sinuses clear on examination and X-ray. Has frequent headaches, which must be due to eyes. (Referred to oculist.)
No general glandular enlargement Heart and lungs: Clear. Wassermann: Negative. Urine: Normal.	Oct., 1913. Chronic tonsillitis. Arthritis.	None.	Oct., 1915. No trouble with joints for past 1½ years. Cervical glands; not palpable. Throat: Looks normal. Teeth: Good.
No general glandular enlargement. Heart and lungs: Clear. Urine: Normal. No urethritis. W. B. C.: 8600. Hb.: 85%.	Jan., 1914. Chronic tonsillitis. Arthritis.	None.	Sept., 1915. Joints normal since operation. No colds or sore throat since operation. Gained in weight. Cervical glands not palpable either side.
Heart and lungs: Clear. Urine: Clear. Gynecological examination: Negative.	Jan., 1915. Chronic tonsillitis Arthritis.	None.	Oct., 1915. Had one attack arthritis since operation; was in bed for several days. At present joints normal. Cervical glands not palpable. Throat: Looks normal.
Heart and lungs: Normal. Spleen: Not palpable. Urine: Normal.	April, 1915. Chronic tonsillitis. Arthritis.	None.	Nov., 1915. No symptoms of arthritis since operation. Cervical glands; Not palpable right; just felt left. Teeth: Good. No colds or sore throat since operation.
Heart and lungs: Normal. Urine: Clear.	April, 1915. Chronic tonsillitis. Arthritis.	None.	Jan., 1916. Joints all normal. Cervical glands: Not palpable. Throat: Normal aside from lymphoid hyperplasia on pharynx.
Heart: Enlarged, def. mitral lesion. Lungs: Clear on perc. and ausc. Liver: Not enlarged. Wassermann: Negative.	June, 1915. Chronic tonsillitis. Arthritis. (Extraction carious teeth.)	An acute flare-up of arthritis; joints swollen and painful; gradually cleared up.	July, 1915. All joints are normal subjectively and objectively. May, 1916. Joints normal since tonsillectomy. General health "better than for years." Cervical glands not palpable either side. Throat: Looks normal. Headaches very infrequent since operation.
Heart and lungs: Clear. Urine: Normal.	June, 1915. Chronic tonsillitis. Arthritis.	None.	Nov., 1915. Joints all normal. Ears: Normal; hearing good. Throat: Normal aside from lymphoid hyperplasia. Referred to dental department for treatment alveolar abscess. Nov., 1916. Joints normal. General health excellent.
Heart and lungs: Clear. Urine: Normal.	July, 1915. Chronic tonsillitis. Arthritis.	None.	Nov., 1915. Joints all normal subjectively and objectively for first time in a year. Teeth: Good. Throat: Looks normal. Cervical glands not palpable on either side.
Heart and lungs: Normal. No general glandular enlargement. Pirquet: Negative 48 hours. Urine: Negative.	Aug., 1915. Chronic tonsillitis. Arthritis.	None.	Nov., 1915. Joints all normal. Unable to examine nose and throat. General health excellent.

TABLE II.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR INFECTIOUS ARTHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
P. H. W. 34400. Male.	W	17	School.	No history tonsillitis but frequent pharyngitis. Scarlet fever 3 years ago. Tonsillitis 2 months ago; 2 weeks later involvement both hands, feet and knees.	None.	Tonsils: Small and densely adherent. Mucopurulent discharge in nasopharynx. Nose: Obstruction due to septal deviation; no sinus infection. Cervical glands: Enlarged at angles jaw.	99.5
H. B. P. 38448. Male.	W	37	M. D.	Constant backache for 2 years. No other joints involved. Frequent colds but no severe tonsillitis.	None.	Tonsils: Small, adherent; much scar tissue. Adenoids: Small, infected. Teeth: Poor condition. Nose: No sinus infection. Cervical glands: Markedly enlarged in posterior triangles.	99.2

TABLE III.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR MYALGIA

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
A. C. 31906. Female.	W	11	School.	Pains, stiffness, tenderness muscles both legs above knee; sometimes constant ache, like "toothache"; again paroxysms of shooting pain, particularly at night. Onset after tonsillitis about a year ago; getting worse. Mouth-breather. No history arthritis or chorea.	None.	Tonsils: Much enlarged; adherent to pillars. Nose: Discharge due to adenoids. No sinus infection. Ears: Normal. Teeth: Few carious areas. Nasopharynx: Large mass adenoids. Cervical glands: Much enlarged in all triangles.	98.6
A. W. 34712. Female.	W	23	Housewife.	Pain in arms, muscles of back and frequent "stiff" neck for the past 2 years. Onset following attack of tonsillitis 2 years ago; no sore throat since this attack. Glands neck enlarge at times, and become very tender. Digestive tract good condition.	None.	Tonsils: Much enlarged; adherent to pillars. Nose: Normal. Ears: Normal. Teeth: Good. Nasopharynx: Small amount adenoid. Cervical glands: Enlarged, tender at angle of jaws.	98.6
A. C. 34756. Female.	W	38	Nurse.	Soreness and stiffness of back, right arm, fingers, and right side neck at frequent intervals for past 2 years. No arthritis. Frequent sore throat for past 2 years. Has had only two attacks acute tonsillitis in past 2 years.	None.	Tonsils: Small; embedded; adherent to pillars. Nose: Hypert. inf. turbinates; otherwise normal. Ears: Normal. Teeth: Good. Nasopharynx: Small amount infected adenoids. Cervical glands: Slightly enlarged, tender.	99
T. S. 36711. Male.	W	27	Lawyer.	Onset 2 years ago following toothache and exposure to cold. Pain, stiffness in left leg. Frequent cramps in muscles left thigh and calf. After a few months muscles of right leg and fingers of right hand involved. Extraction abscess tooth with temporary relief.	None.	Tonsils. Enlarged; very adherent. Nose: Normal. Ears: Normal. Teeth: Opening into left antrum due to extraction of molar tooth; others good. Nasopharynx: Small amount adenoid. Cervical glands: Enlarged at angles jaw.	97.5

TABLE IV.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR RHEUMATOID ARTHRITIS

R. C. 29274. Male.	W	17	Cotton factory.	Tonsillitis frequent, last time 14 months ago. Arthritis began 8 months ago in fingers; other joints grad. involved. All large joints now involved. Lost 10 pounds in weight. Is a mouth-breather.	None.	Tonsils: Slightly enlarged; adherent to pillars. Nose: Practically normal; no sinus infection. Ears: Normal. Teeth: Good. Nasopharynx: Large mass adenoids; infected. Cervical glands: Enlarged; hard at angles jaw on both sides; also posterior triangles.	99
B. C. 29450. Female.	W	55	Housewife.	No history tonsillitis; colds infrequent. Onset arthritis 5 years ago. Arms, shoulders, elbows, knees, ankles all involved.	None.	Tonsils: Enlarged; large crypts filled with debris. Nose: Left side greatly hypert. inf. turb.; no evidence sinus infection. X-ray negative. Ears: Normal. Teeth: Abscess at root upper molar on right. Nasopharynx: Discharge from posterior nares; otherwise negative. Cervical glands: Measure 2 x 5 cm. at angle jaw on left; slightly enlarged in other triangles.	98.5
M. G. 29846. Female.	W	32	Housewife.	Quinsy 2 years ago; severe tonsillitis 4 months ago. Pain and stiffness spine for 14 years; recently much worse. After last tonsillitis shoulders and other joints involved for first time. Is entirely helpless; great pain on moving in bed.	None.	Tonsils: Enlarged; much scar tissue; crypts filled with debris at upper pole. Nose: Normal; sinuses clear (X-ray). Ears: Chronic supp. otitis media double for 4 months. Nasopharynx: Chronically infected adenoid; discharge from Eustachian tubes. Teeth: In poor condition. X-ray: No root infection. Cervical glands: Enlarged, tender, both sides.	97.8
N. G. 32290. Female.	W	41	Housewife.	For 10 or 15 years attacks of tonsillitis once or twice a year. Following each of these attacks there were some joint symptoms, and after a few an acute polyarthritis. Up to 3 years ago joints have always cleared up between the sore throats; since this time have been stiff and painful. Cervical and thoracic spine, fingers, shoulders, knees are now involved. Muscles wasted. Weight 40 pounds below normal.	None.	Tonsils: Small; adherent to pillars; marked chronic pharyngitis. Nose: Hypert. inf. turb.; otherwise normal. Teeth: Much dental work. X-ray: No root infection. Ears: Normal. Nasopharynx: Chronically infected; discharge. Cervical glands: Enlarged, hard, freely movable at angles jaw; also in posterior triangles.	98.8

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Heart and lungs: Normal. Has general glandular enlargement. Blood pressure 132 m. m. (Tycos). R. B. C.: 4,700,000. W. B. C.: 5400. Hb.: 75%. Urine: Tr. albumin; no casts. Wassermann: Negative.	July, 1914. Chronic tonsillitis. Arthritis. (Nasal operation also done.)	None.	Aug., 1916. Joints all normal. General health excellent for past 1½ years.
Heart and lungs: Normal. Urine: Normal. Wassermann: Negative. X-ray: Spine shows no bony changes.	Nov., 1915. Chronic tonsillitis. Infected adenoids. Spondylitis, infectious. (Referred to dentist.)	None.	Aug., 1916. Back was worse for six weeks after tonsillectomy. Then began to improve. Has been perfectly well since April, 1916. Normal range of motion of spine. Working regularly for past 5 months. Has gained 35 pounds in weight.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Marked general glandular enlargement. Spleen: Large. Heart and lungs: Normal. Urine: Normal. W. B. C.: 9500. Hb.: 85%. No local swelling or redness of affected muscles.	April, 1913. Chronic tonsillitis. Cervical adenitis. Mouth-breather. Myalgia.	None.	May, 1913. Still has some stiffness and occasional pain in affected muscles. Mother says she is much better than at any time during preceding 6 months. Glands still enlarged in neck and axillæ, groins. Spleen palpable. Throat and nasopharynx look normal aside from a hypertrophic pharyngitis. April, 1914. No muscular pain or stiffness for over a year. General health excellent. Glands neck not palpable. Still slight general glandular enlargement. Spleen not palpable.
No general glandular enlargement. Spleen not palpable. Heart and lungs: Normal. Urine: Normal.	June, 1914. Chronic tonsillitis. Cervical adenitis. Myalgia.	None.	Feb., 1916. No recurrence of pain in arms; stiffness of neck or back for over one year. Throat looks normal. Glands in anterior triangle are not palpable; a few slightly enlarged glands felt in each posterior triangle. General health excellent.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal.	June, 1914. Chronic tonsillitis. Myalgia.	None.	Jan., 1916. Entirely relieved of soreness and stiffness in arm, back, fingers, and neck. Throat looks normal aside from a hypertrophic pharyngitis. Cervical glands: Not palpable in anterior triangle; small, hard in posterior triangles.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal. Wassermann: Negative.	April, 1915. Chronic tonsillitis. Cervical adenitis. Myalgia.	None.	Jan., 1916. Entirely well. No recurrence of trouble for past year. Cervical glands not palpable.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

General glandular enlargement. Heart: Normal. Lungs: Bronchiectasis. Joints X-ray: Bony changes. Erosion of cartilage. Gastric analysis: Negative. W. B. C.: 8500. Hb.: 72%. No urethritis. Wassermann: Negative.	Feb., 1912. Chronic tonsillitis. Rheumatoid arthritis.	None.	June, 1915 (over 3 years after operation). Joints worse; spine involved. Has been in bed or wheel chair all the time since leaving hospital. Legs much retracted; muscles atrophied. Throat normal. No colds during past 3 years.
Slight general glandular enlargement. Heart: Not enlarged; soft systolic murmur, not transmitted. Lungs: Normal. Urine: Normal. Wassermann: Negative. Gynecological examination negative. X-ray joints show bony changes.	Mar., 1912. Enlarged tonsils. Enlarged cervical glands at angle jaw left. Rheumatoid arthritis. (Referred to dentist.)	None.	June, 1915. No improvement in joints; walks with crutches. Baking affords some relief. Glands neck not palpable.
General glandular enlargement. Heart and lungs: Normal. Thyroid: Enlarged; tremor; pulse rapid. Urine: Clear. R. B. C.: 4,600,000. W. B. C.: 9200. Hb.: 80%.	May, 1912. Chronic tonsillitis. Chronic otitis media. Rheumatoid arthritis.	None.	June, 1915. No improvement in condition of spine; other joints have never cleared up. Still has great deal of pain which is relieved by atophan more than any other drug. Thyroid condition improved. Cervical glands barely palpable. Has had no sore throat since operation. Ears ceased to discharge about 1 month after operation. Hearing good.
Slight general glandular enlargement. Heart and lungs: Normal. Urine: Trace albumin; no casts. W. B. C.: 7200. Hb.: 99%. X-ray joints shows overgrowth of bone, and some destruction of cartilage.	June, 1913. Chronic tonsillitis. History frequent sore throat with arthritis. Rheumatoid arthritis.	None.	June, 1915. Marked improvement of joint condition. No new joints have become involved. Much less pain. Now has good motion of head, shoulders and arms but not to their normal extent. Muscles still quite weak. She can now "dress her own hair." Throat normal; no discharge from nasopharynx. Has had no "colds" since operation.

TABLE IV.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR RHEUMATOID ARTHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
G. A. 34234. Male.	W	19	Clerk.	Stiff and painful back for 1 year; hips and knees involved for longer time. Back getting worse. Is mouth-breather. Infrequent sore throats. Referred from orthopedic clinic.	None.	Tonsils: Slightly enlarged; densely adherent to pillars. Teeth: Infected wisdom on left. Nose: Enlarged inf. and middle turb. left; clouding left antrum (X-ray). Ears: Normal. Nasopharynx: Large mass adenoids. Cervical glands: Enlarged; tender; hard; movable; in anterior and posterior triangles.	99.8
J. D. 34293. Male.	W	48	Architect.	No history tonsillitis but discharge into throat due to infected sinuses. Onset arthritis 8 years ago with pain in back and abdomen; back grad. became stiff and painful. Other joints involved gradually. In May, 1913, fluid (250 cc.) removed from right knee; culture negative. Three months ago left knee involved. Sinus operation in 1913 without benefit.	None.	Tonsils: Small; embedded; densely adherent to pillars. Teeth: Most have been removed; others good. Nose: No discharge; sinuses appear clear. Ears: Normal. Nasopharynx: Small amount infected adenoids. Cervical glands: Slightly enlarged at angle jaws and in posterior triangles.	99
G. M. 34480. Male.	W	29	Teacher.	Infrequent sore throats and coryza. Onset arthritis 2 years ago, involving hips, sacroiliac joints, fixation of ribs, right knee and ankle, both shoulders. No headache. No digestive disturbances.	None.	Tonsils: Small; densely adherent to pillars. Teeth: Pyorrhea; no root abscess (X-ray). Nose: No evidence of sinus infection. Ears: Normal. Nasopharynx: Chronically infected adenoids; discharge. Cervical glands: Enlarged at angle jaw, especially right.	99.6
L. W. 34531. Female.	W	51	Housewife.	Occasional tonsillitis since childhood; frequent coryza. Onset arthritis was insidious. At present walks only with crutches; contractures right leg particularly. Practically all large joints and many small joints involved.	None.	Tonsils: Small; embedded; adherent to pillars; chronic hypert. pharyngitis. Nose: No evidence of sinus infection. Ears: Chronic catarrhal otitis media double. Teeth: Pyorrhea; infection under crown. Nasopharynx: Chronically infected adenoids; discharge. Cervical glands: Markedly enlarged at angles jaw; painful on palpation. Enlarged in both posterior triangles.	98.6
L. H. 35026. Female.	W	46	Housewife.	Frequent tonsillitis during past 15 years. First noticed arthritis 8 years ago; gradually involved spine, hips, knees, shoulders, fingers. No digestive disturbances aside from constipation.	None.	Tonsils: Small; embedded; adherent to pillars. Chronic pharyngitis. Teeth: Many crowns; pyorrhea. Nose: Deflected septum to right; no sinus infection. Ears: Normal. Nasopharynx: Infected adenoids; discharge. Cervical glands: Not enlarged; just palpable at angle jaws and in posterior triangles.	99.8

TABLE V.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR ACUTE RHEUMATIC FEVER

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination. Tonsils, Nose, Sinuses, Ears, Nasopharynx, Teeth, Cervical Glands.	Temp. (Mouth) on Day Before Operation. ° F.
A. H. 28956. Male.	W	10	School.	In 1907 acute tonsillitis followed by measles. In 1908 acute rheumatic fever with involvement of joints. In 1909 a second attack acute rheumatic fever with arthritis and chorea. In 1910 a third attack acute rheumatic fever. On present admission is just recovering from a fourth attack of rheumatic fever with arthritis and chorea. All attacks associated with tonsillitis.	Aortic insufficiency. Mitral insufficiency. Cardiac arhythmia. Chorea.	Tonsils: Only slightly enlarged; densely adherent to the pillars. Nose: Normal. Sinuses: All seem clear. Ears: Normal. Nasopharynx: Chronically infected adenoids. Mouth-breather. Teeth: Good. Cervical glands: Enlarged; hard; movable; not tender; at angles jaw and posterior triangles.	99.6
J. M. 29195. Male. Med. No. 28435.	W	27	Tailor.	Frequent attacks tonsillitis for many years past. Had a severe attack 7 weeks ago; has never entirely recovered. Two weeks ago had headache, epistaxis, anorexia, vomiting and epigastric pain. Practically all joints involved, and a purpuric eruption on legs. This is first attack.	None.	Tonsils: Much hypertrophied; adherent to pillars. Nose: Approximately normal. Sinuses: Not infected. Ears: Normal. Nasopharynx: Chronically infected adenoids. Teeth: Pyorrhea; some carious. Cervical glands. Enlarged at angles jaw; slightly enlarged in both posterior triangles.	98.6
L. C. 29800. Female.	W	23	Seamstress.	Attacks of tonsillitis associated with rheumatism every winter since 8 years of age. Dyspnœa on exertion for many years. Heart flutters at times. Swelling of ankles on standing. Six weeks ago acute tonsillitis with chills, fever, and involvement of all joints, swollen, tender, red.	Mitral insufficiency.	Tonsils: Enlarged; adherent to pillars. Nose: Normal. Sinuses: Not infected. Ears: Normal. Nasopharynx: Small amount adenoids. Teeth: Many carious. Cervical glands: Enlarged at the angles of jaw; hard; movable; tender. Slightly enlarged in posterior triangles.	99
S. W. 29833. Female.	W	30	Housewife.	Tonsillitis at intervals since childhood. Acute rheumatic fever with involvement of practically all joints when 10 years of age; another attack when 29 years of age; a third attack 6 weeks ago. Joints red, hot, swollen and very painful; at present time are clearing up rapidly. Has lost 10 pounds in weight with this attack.	None.	Tonsils: Small; fibrous; adherent to pillars. Nose and sinuses: Normal. Nasopharynx: No adenoids. Ears: Normal. Teeth: Much dental work; X-ray: No infection. Cervical glands: Enlarged, tender at angles of jaw.	99.2

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
General glandular enlargement. Heart and lungs: Normal. Urine: Normal. (Culture from tonsils after removal, staphylococci.)	Mar., 1914. Infected tonsils, adenoids. Cervical adenitis. Rheumatoid arthritis.	None.	June, 1915. Slight improvement in condition of joints according to patient. Back still stiff and painful. No new joints involved. Is able to work regularly.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal. Marked muscular wasting around affected joints. R. B. C.: 4,000,000. W. B. C.: 8600. Hb.: 65%. (Culture from tonsils after removal, staphylococci.) Digestive tract normal. Wassermann: Negative.	April, 1914. Infected tonsils. Rheumatoid arthritis.	None.	Aug., 1914. No improvement. More pain. New joints involved. Feb., 1916. Absolutely helpless for past year; gradually growing worse. Spine rigid; jaw ankylosed. Great pain.
General glandular enlargement. Heart: Crescendo murmur at left edge sternum replacing a' with each inspiration; not heard in expiration; not heard in axilla. Lungs: Fixation ribs; few râles over back at apex and base. No tbc. bacilli in sputum. Urine: Normal. G. U. tract: Normal.	May, 1914. Small, embedded tonsils. Enlarged gland at angle jaw on right. Rheumatoid arthritis.	Developed scarlet fever on 2d day after operation. Made normal recovery.	July, 1914. No improvement in joint condition. July, 1915. No improvement; some of joints worse; new joints involved. Neck and spine fixed and very painful. Cannot walk.
General glandular enlargement. Heart and lungs: Clear. Urine: Normal. Gynecological examination: Normal. R. B. C.: 3,900,000. W. B. C.: 5400. Hb.: 72%. P. M. M.: 53%. Lymph: 43%. (Culture from tonsils after removal, staphylococci.)	May, 1914. Chronic tonsillitis. Cervical adenitis. Chronic infection nasopharynx. Secondary anæmia. Rheumatoid arthritis.	Bleeding from right tonsil due to slipping of catgut ligature. Vessel picked up with clamp and ligated with silver clip.	June, 1915. No improvement in joint condition. Spent several months in Hot Springs, Ark., without benefit. Is now bedridden. Reports that glands in neck are still enlarged and at times tender.
No general glandular enlargement. Heart: Normal. Lungs: Slight impairment right apex and lower back. No tbc. bacilli found. Urine: Trace albumin, otherwise normal. W. B. C.: 7900. Diff. count normal.	July, 1914. Small infected tonsils. History frequent tonsillitis. Infected adenoids. Rheumatoid arthritis. (Extraction infected teeth; treatment pyorrhea.)	None.	June, 1915. No improvement. Has lost weight and strength. Contractures arms and legs. Bed ridden. Report throat normal.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Slight general glandular enlargement. The joints in both hands, left elbow, both knees, left hip were involved in last attack. Still slight redness, tenderness, swelling and pain on motion. W. B. C.: 8100. Hb.: 83%. Urine: Normal.	Dec., 1911. Repeated attacks tonsillitis. Rheumatic fever. Chorea.	None.	Jan., 1913. Following coryza had pain in right ankle and knee. Temperature 101° F. Was kept in bed for 4 weeks. No chorea. Oct., 1913. Has been well since last attack in Jan., 1913. All joints are normal at present. No chorea. Heart as before. Dec., 1913. In good shape. Throat looks normal; breathes normally through nose. Feb., 1914. In good shape. Heart condition the same; pulse strong and regular. No return of chorea. X-ray shows heart enlarged. Nov., 1914. In good shape. Has had no joint symptoms since Jan., 1913. Feb., 1915. Had another attack of acute rheumatic fever with multiple arthritis. Return of chorea. July, 1915. Seems perfectly free of all joint symptoms. Heart the same: compensation good. Temperature normal. No recurrence chorea.
General glandular enlargement. Urine: Slight trace albumin, otherwise negative. Purpuric eruption over both lower legs. Heart: Systolic murmur; not transmitted. Lungs: Normal. Multiple arthritis. W. B. C.: 12,800. Hb.: 85%.	Feb., 1912. Repeated attacks tonsillitis. Purpura rheumatica (Schönlein's disease). (Referred to dentist.)	None.	Aug., 1915 (over 3 years after operation). Has been working regularly since operation. No attacks of sore throat, rheumatism, or purpura. Joints all normal. No headaches. Remembers having had coryza on three occasions since operation. Glands are not palpable in anterior or posterior triangles, or in axillæ. Teeth in good condition. Throat and nasopharynx look normal with exception of chronic pharyngitis (smokes constantly). Heart: Normal. Pulse 72, regular. Liver and spleen not palpable. Urine: Normal.
Slight general glandular enlargement. Thyroid: Enlarged; soft. Pulse rapid; regular. Lungs: Clear. Urine: Normal. Multiple arthritis. W. B. C.: 15,200. Hb.: 74%. Blood culture: Negative.	May, 1912. Repeated attacks tonsillitis. Hyperthyroidism. Rheumatic fever. Multiple arthritis. Mitral insufficiency. (Extraction carious teeth.)	None.	June, 1915 (3 years after discharge from hospital). Has been in perfect health. Gained in weight. No sore throats; no further trouble with joints. Has been working regularly. Heart lesion well compensated. No longer swelling of ankles on standing.
General glandular enlargement. Lungs and heart: Normal. Urine: Normal. R. B. C.: 4,600,000. W. B. C.: 8700. Hb.: 70%. Wassermann: Negative.	May, 1912. Chronic tonsillitis. Rheumatic fever.	None.	Jan., 1916. Joints normal since Aug., 1912. General health much improved. No sore throat; colds very infrequent. Cervical glands not palpable. Heart: Normal.

TABLE V.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR ACUTE RHEUMATIC FEVER

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination. Tonsils, Nose, Sinuses, Ears, Nasopharynx, Teeth, Cervical Glands.	Temp. (Mouth) on Day Before Operation. ° F.
G. C. 29854. Female.	W	12	School.	History of four severe attacks of tonsillitis with fever and chills. With last attack had precordial pain; dyspnœa; swelling, redness and pain in all joints. Hips particularly painful. Temperature was 105° F.	Acute fibrinous pericarditis. Mitral insufficiency.	Tonsils: Much enlarged; especially on right. Nose: Normal. Sinuses: Not infected. Ears: Chronic otitis media; suppurative. Nasopharynx: Large mass adenoids; mouth-breather. Teeth: Carious. Cervical glands: Enlarged; particularly on right in anterior triangle.	98.5
C. J. 30811.	C	12	School.	Has had frequent attacks tonsillitis. In 1911 had acute rheumatic fever with precordial pain, and involvement of all joints. In Jan., 1912, had second attack with fever; swelling and tenderness of joints. Dyspnœa on exertion. For the past month has had almost constant sore throat; enlarged cervical glands; unable to walk or use arms without pain.	Mitral insufficiency.	Tonsils: Enlarged, particularly on right; adherent to pillars; crypts filled with debris. Nose: Normal aside from discharge due to adenoids. Sinuses: Clear (X-ray diag.). Ears: Drums intact; tenderness over mastoid. Nasopharynx: Large mass adenoids; mouth-breather. Cervical glands: Size of walnut at angle jaw on right; soft; tender; movable. Also enlarged in all other triangles.	98.6
E. C. 30828. Female.	C	7		History three or four attacks tonsillitis every year for past 3 years. In 1911 following tonsillitis had swelling of joints; pain on motion; was confined to bed for six weeks. History choreiform movements at intervals for past year.		Tonsils: Much hypertrophied; adherent. Nose: Normal aside from discharge due to adenoids. Sinuses: Seem normal. Ears: Chronic catarrhal otitis media; no discharge. Nasopharynx: Large mass adenoids; mouth-breather; adenoid facies. Cervical glands: Enlarged at angle of jaw on both sides, especially right; also in posterior triangles.	99.6
A. W. 31004. Male.	W	15	Office.	Frequent tonsillitis; for past year almost constant sore throat. In 1910 had acute rheumatic fever; all joints involved; in bed 2 months. In 1911 a second attack rheumatic fever with multiple arthritis. Joints all normal at present. No history chorea. Tonsils "clipped" when 6 years of age.	Mitral insufficiency.	Tonsils: Enlarged; adherent to pillars. Adenoids: Large mass; infected. Ears: Normal. Teeth: Good. Cervical glands: Enlarged at angles jaw both sides.	
J. O'N. 31774. Male.	W	16	Office boy.	Infrequent tonsillitis; arthritis came on 2 months after sore throat which lasted 4 days. Has had four attacks polyarthritis in past 3 years. Only one attack associated with cold or sore throat. No history chorea. Complains of frequent attacks of palpitation heart.	Mitral insufficiency. Mitral stenosis. Tachycardia.	Tonsils: Enlarged; adherent to pillars. Nose: Normal. Sinuses: Not infected. Ears: Normal. Nasopharynx: Small amount adenoids. Cervical glands: Measure 3 x 5 cm. at angle jaw on both sides. (Culture from tonsils after removal showed pure culture streptococcus pyogenes.) Teeth: Carious.	98.4
M. P. 32484. Female.	W	36	Housewife.	Complains pain and stiffness of spine, also in elbows, fingers, and knees. History acute rheumatic fever with endocarditis and polyarthritis when 10 years of age. Joints soon cleared up and were normal until second attack rheumatic fever 3 years ago. After this the joints never became entirely normal. History frequent tonsillitis.	Adherent pericardium. Aortic insufficiency. Mitral insufficiency.	Tonsils: Small; fibrous; densely adherent to pillars. Nose: Normal. Sinuses: Clear. Ears: Normal. Nasopharynx: Small amount adenoids. Teeth: Carious lower molar on right. Cervical glands: Enlarged; hard; freely movable at angle jaw on each side. Slightly enlarged in both posterior triangles.	99
M. W. 33234. Female.	W	7		Frequent attacks tonsillitis with high fever, headaches and vomiting. Acute rheumatic fever 8 months ago. Joints never entirely returned to normal. No chorea. Is mouth-breather.	Mitral insufficiency.	Tonsils: Small; embedded; adherent. Teeth: Fairly good. Ears: Not infected. Nose: Normal, aside from discharge due to adenoids. Nasopharynx: Large mass adenoids; mouth-breather. Cervical glands: Enlarged at angles jaw. (Microscopical examination tonsils and adenoids after removal shows no tbc. lesion.)	99.2
S. C. 33586. Female.	W	12	School.	History of several attacks of rheumatic fever, last attack in Nov., 1913; at this time practically all joints were involved. The spine, both wrists and one hip have never entirely returned to normal. Has frequent headaches (due to eyes). Frequent sore throat; each attack makes affected joints worse.	None.	Tonsils: Much enlarged. Nose: Normal. Ears: Normal. Sinuses: All clear. Nasopharynx: Fairly large amount adenoid. Teeth: Good. Cervical glands: Much enlarged at angle jaw on both sides; also in both posterior triangles. (Culture for tonsils after removal: Streptococcus hæmolyticus.)	99.2
S. M. 34302. Male.	W	14	School.	In Feb., 1913, attack acute rheumatic fever with polyarthritis; joints entirely cleared up. In Jan., 1914, had second attack acute rheumatic fever with polyarthritis; precordial pain; was in bed for 3 months. No history tonsillitis.	Acute pericarditis. Adherent pericardium. Mitral insufficiency.	Tonsils: Very large; meet in mid-line; adherent to pillars. Nose: Hypert. inf. turb.; otherwise normal. Sinuses: Clear. Ears: Normal. Nasopharynx: Small mass adenoids; had been previously removed. Cervical glands: Enlarged, tender in anterior and posterior triangles. Teeth: Many carious.	99
W. S. 34780. Male.	W	8		History occasional sore throats for past 3 or 4 years; about 2 months ago had tonsillitis followed in a few days by chills; high fever; swelling, redness, pain knees, ankles, hands, wrists, elbows. No history chorea.	None.	Tonsils: Greatly enlarged. Nose: Normal except discharge from adenoids. Sinuses: Not infected. Ears: Normal. Nasopharynx: Large mass adenoids; mouth-breather. Teeth: Carious. Cervical glands: Enlarged at angle jaw on both sides.	98.4

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
General glandular enlargement. Urine: Clear. Lungs: Clear. R. B. C.: 3,800,000. W. B. C.: 16,200. Hb.: 60%.	May, 1912. Repeated attacks tonsillitis. Pericarditis. Mitral insufficiency. Rheumatic fever. (Extraction carious teeth.)	None.	July, 1915. Had recurrence of joint symptoms July, 1912 (2 months after leaving hospital). In Dec., 1913, had severe attack arthritis involving ankles, knees, wrists; was confined to bed for several months. Still has some stiffness and impairment of motion in right wrist and ankle. Has had no sore throats since operation, but above attacks were associated with coryza, headache, vomiting and fever. Is a healthy, well-nourished child. Teeth: Carious. Ears: No discharge; drum intact; hearing normal. Heart: Enlarged; systolic murmur heard in axilla and back; no pericardial rub.
General glandular enlargement. Lungs: Slight impairment left apex; no rales. Urine: Normal. W. B. C.: 10,400. Hb.: 67%. Heart: P. M. I. 4 i. s. 9 cm. from mid-line. Dullness 10 cm. from mid-line to left. Systolic murmur at apex, also heard in axilla.	Oct., 1912. Frequent attacks tonsillitis. Mitral insufficiency. Rheumatic fever.	None.	May, 1913 (7 months after operation). Joints all normal. Has frequent colds; no sore throat. Difficulty in breathing through nose due to hypert. of both inf. turb. Nasopharynx and throat look normal. Glands of neck barely palpable. Has gained weight. June, 1915. On one or two occasions since last note has had some stiffness in joints for 2 or 3 days at a time. All joints normal now. Has worked regularly since Dec., 1912; has not lost a day on account of sickness. Glands in anterior triangles are not palpable. Teeth in good condition. Nose: The hypert. of the inf. turb. has disappeared; now looks normal. Heart: Not enlarged; P. M. I. 1 cm. inside m. line; sounds normal at apex and base.
General glandular enlargement. Lungs: Clear. Heart: Not enlarged; systolic murmur at apex, not well heard in axilla. Urine: Normal. Has jerky, irregular choreiform movements of both arms and legs.	Nov., 1912. Frequent attacks tonsillitis. Rheumatic fever. Endocarditis? Chorea.	None.	May, 1913. Has had no return of arthritis or chorea. Breathes normally through nose; has grown rapidly; appetite good. Glands in cervical triangles are still slightly enlarged. Heart sounds clear. Mar., 1914. No return of chorea or arthritis. No evidence of any heart lesion. Ears: Hearing normal; drums intact. Teeth: Good. Aug., 1915. General health excellent. No return of arthritis or chorea. Heart normal.
No general glandular enlargement. Heart: 9½ cm. to left from mid-line; not enlarged to right. Systolic murmur at apex, axilla and back. Pulse: Regular; no arteriosclerosis. Lungs: Clear on perc. and ausc. Liver and spleen: Not palpable. W. B. C.: 6300. Hb.: 84%. Blood pressure 105 mm. Hg. Urine: Normal.	Nov., 1912. Chronic tonsillitis. Infected adenoids. Cervical adenitis. History two attacks rheumatic fever.	None.	Mar., 1914. Has been perfectly well since operation. Throat and nasopharynx look normal. No recurrence of arthritis. Gained 35 pounds in weight. Joints normal. Sept., 1915. Perfectly well; works regularly. Cervical glands not palpable. No symptoms of heart lesion. Joints normal. Heart: Apex in 5th s. Dullness 11 cm. to left of mid-line; 3½ cm. to right in 4th s. A soft systolic murmur at apex not transmitted to axilla. Sounds clear at base. Perfect compensation.
Lungs: Clear. General glandular enlargement; epitrochlears particularly enlarged. Wassermann: Negative. R. B. C.: 4,600,000. W. B. C.: 8000. Hb.: 75%. Urine: Albumin; trace few hyaline and granular casts.	Mar., 1913. Three attacks acute rheumatic fever. Mitral insufficiency and stenosis. Renal lesion. (Extraction carious teeth.)	Elevation of temperature to 101° F. Right wrist and shoulder became hot, swollen, painful; was apparently normal before operation. Rapidly cleared up.	May, 1913 (2 months after tonsillectomy). Joints all seem normal. Appetite good. Cervical glands still enlarged. Heart: 11 cm. left; 4 cm. to right; murmurs as before. Mar., 1914. Glands at angle jaws not palpable. Teeth in good shape. Throat, nose and nasopharynx normal. Has gained weight. The axillary and epitrochlear glands are much smaller. Urine: Normal. Dec., 1915. Is a strong, healthy looking man; has had no illness of any kind for 2 years. Works regularly. Urine: Normal. Heart: Much smaller; well compensated. Has no more paroxysmal tachycardia. The anterior cervical glands are not palpable on left; barely felt on right. Throat looks normal aside from hypertrophic pharyngitis.
No general glandular enlargement. Lungs: Clear. W. B. C.: 7000. Hb.: 90%. Urine: Normal. X-ray of joints and spine; infectious arthritis. Calmette 1% negative. Calmette 5% negative.	July, 1913. Attacks tonsillitis. Rheumatic fever. Heart lesions. Arthritis. (Extraction carious teeth.)	None.	June, 1915. There has been no improvement in the arthritis of the lower spine; the elbows, fingers and knees are improved but not normal. Still painful and very stiff early in mornings, and during rainy weather. Cervical glands not palpable. Heart lesion well compensated. There has been no increase in the joint symptoms or involvement of other joints.
General glandular enlargement. Heart: Slightly enlarged. Systolic murmur at apex transmitted to axilla and back; also faint murmur at base. Liver: Not enlarged. Spleen: Palpable. Lungs: Clear on posterior and anterior. W. B. C.: 9600. (Culture from tonsils after removal; staphylococcus.)	Nov., 1913. Chronic tonsillitis. Rheumatic fever. Heart lesion. Tbc. synovitis.	None.	Mar., 1914. Joints all normal with exception left ankle. No colds or sore throat since operation. April, 1914. Re-admitted to hospital and operated on for tbc. synovitis left ankle. April, 1915. Ankle well; no other joints involved. No evidence Tbc. elsewhere. General health better than ever before. Aug., 1915. No return arthritis. Cervical glands barely palpable. Spleen not felt. Nose, throat, ears normal. Teeth carious. Heart: Not enlarged to right or left. Systolic murmur, maximum at apex, heard in axilla and back. No diastolic murmur. No shock or thrill. Well compensated lesion.
No general glandular enlargement. Lungs: Clear. Heart: Normal. Urine: Normal.	Jan., 1914. Frequent tonsillitis. Rheumatic fever. Arthritis.	None.	July, 1915 (18 months after tonsillectomy). Still has pain at times in back, but no limitation of motion at present. The wrists and hip have cleared up; now appear normal in every way. The cervical glands are still enlarged in both anterior and posterior triangles. There is one carious tooth (referred to dental department).
General glandular enlargement. Epitrochlears large. Axillary glands tender. Wassermann: Negative. Lungs: Slight dullness left lower back; just recovered from pneumonia. R. B. C.: 3,800,000. W. B. C.: 13,400. Hb.: 65%. Urine: Clear.	Apr., 1914. Rheumatic fever. Heart lesions. Arthritis. (No history tonsillitis.) (Referred to dentist.)	None.	Jan., 1916 (over 1½ years after tonsillectomy). Joints have all cleared up; no stiffness or pain for over a year. Glands at angle jaw on each side measure about 2 cm. in diameter; other smaller glands in anterior triangles; none palpable in posterior triangles. Teeth: Many filled. Nose: Hypert. inf. turb. left. "General health better than ever before." Heart: P. M. I. 4 s., 2½ cm. inside m. line. Not enlarged to right. No palpable thrill. Mitral insufficiency as before. No friction rub heard. Pulse regular and strong; 80 to minute.
General glandular enlargement. X-ray joints shows only periarticular changes. Lungs: Clear. Heart: Normal. Urine: Albumin and R. b. c. No casts.	June, 1914. Attacks tonsillitis. Rheumatic fever. Renal lesion.	None.	Aug., 1915 (over 1 year after tonsillectomy). Joints normal; has had no recurrence of joint symptoms. Had acute otitis media last winter; ears are normal at present time. Glands in anterior triangles not palpable; measure about ½ cm. in diameter in posterior triangles. Teeth in good condition. Nose, throat, and nasopharynx look normal. Axillary and epitrochlear glands still palpably enlarged. Urine: Normal in every way; no trace of albumin.

TABLE V.—ARTHRITIS GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR ACUTE RHEUMATIC FEVER

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examinations. Tonsils, Nose, Sinuses, Ears, Nasopharynx, Teeth, Cervical Glands.	Temp. (Mouth) on Day Before Operation. ° F.
S. P. 34838. Male.	W	22	Student.	Trouble with nose and throat all his life. Frequent and severe "winter colds," and attacks tonsillitis. Has had three attacks rheumatic fever in past 8 years. Last attack 1 month ago was associated with tonsillitis. No chorea.	Mitral insufficiency.	Tonsils: Enlarged; very adherent to pillars. Nasopharynx: Infected adenoids. Ears: Normal. Nose: Hypert. inf. turb.; sinuses clear. Teeth: Good. Cervical glands: Slightly enlarged angle jaws both sides; just palpable in posterior triangles.	99.6
H. F. 34859. Male.	W	25	Student.	Frequent tonsillitis during past 2 years. Last attack of tonsillitis was followed 4 days later by acute rheumatic fever; pericarditis with effusion; and myocarditis. All joints were affected, but left knee and hip cleared up more slowly than others.	Pericarditis with effusion. Myocardial insufficiency.	Tonsils: Enlarged; densely adherent to pillars. Nose: Hypert. inf. turb.; no sinus infection. Ears: Normal. Nasopharynx: Small amount adenoids; discharge from posterior nares. Teeth: Good. Cervical glands: Enlarged at angles jaw and in posterior triangles.	98.4
E. McC. 35084. Female.	W	7		History frequent tonsillitis since early childhood. Is said to have had "muscular rheumatism" 3 years ago. Has had two attacks of rheumatic fever within the past 1½ years. Both associated with tonsillitis. All joints of legs involved. Has fever and sore throat almost constantly for past month. Joints are stiff and painful on motion.	Mitral insufficiency.	Tonsils: Not enlarged; adherent to pillars. Nose: Normal. Sinuses: Not infected. Teeth: Carious. Ears: Drums intact; hearing good. Nasopharynx: Moderately enlarged. Cervical glands: Enlarged in anterior and posterior triangle on both sides.	100
B. T. 35494. Female.	W	13	School.	Frequent tonsillitis. Mouth-breather. Frequent epistaxis. Acute rheumatic fever with heart lesion and multiple arthritis 6 years ago. Has been dyspnœic since on slight exertion. Joints still stiff and at times very painful. No chorea.	Mitral insufficiency.	Tonsils: Enlarged; especially on left; adherent to pillars. Teeth: Many carious; alveolar abscess. Ears: Chronic catarrhal otitis media. Nose: Normal aside from discharge due to adenoids. Nasopharynx: Chronically infected adenoids. Mouth-breather. Cervical glands: Enlarged in all triangles.	98
E. H. 35753. Female.	W	12	School.	History frequent tonsillitis, and discharge from both ears 1 year ago. Has had one attack of polyarthritis involving the large and small joints, with fever and sore throat. Some pain over heart. Joints normal at present. Frequent headaches.	Mitral insufficiency.	Tonsils: Much enlarged. Nose: Deflected septum to right; discharge on right. Teeth: Good. Nasopharynx: Large mass adenoids; mouth-breather; adenoid facies. Ears: Purulent discharge both sides. Cervical glands: Enlarged at angle jaw both sides; smaller in posterior triangles.	98.5
H. C. 36124. Male.	W	25	Farmer.	Following an attack of tonsillitis 5 years ago had high fever and swelling, redness, tenderness of joints of legs and arms. Has had frequent recurrence of these attacks. At present the back is stiff and painful. Headaches.	Mitral insufficiency.	Tonsils: Both small, fibrous, densely adherent to pillars. Nose: Obstruction due to deflected septum; hypert. of inf. turb. and mid. turb. on left. X-ray: Shows clouding left frontal sinus. Teeth: Good. Ears: Chronic catarrhal otitis media; tinnitus. Nasopharynx: Discharge from left side nose; chronic pharyngitis. Cervical glands: Enlarged on both sides at angle jaw. Chain of enlarged glands in both posterior triangles.	98.4
K. G. 36180. Female.	W	10	School.	No history of tonsillitis. Complains pain in chest; skin rash (urticaria); pain, swelling, redness of joints; headaches. First attack arthritis 1 year ago; last attack 1 month ago. Joints still painful; has been in bed for 3 weeks. Frequent colds and cough; dyspnœa on exertion.	Aortic insufficiency. Mitral insufficiency.	Tonsils: Much enlarged; adherent to pillars. Nose: Right inf. turb. enlarged; sinuses clear. Teeth: Good. Ears: Normal. Nasopharynx: Large mass adenoids; mouth-breather. Cervical glands: Enlarged in both anterior and posterior triangles.	99.6
H. C. 36205. Female.	W	18	Clerk.	Has had two admissions to this hospital for acute rheumatic fever. First attack in Feb., 1914; associated with streptococcic tonsillitis; endocarditis; multiple arthritis. Joints cleared up. Second attack July, 1914. Came on about 1 month after a severe tonsillitis. Knees chiefly affected. Since this attack joints stiff and painful; walks with difficulty, using a cane. No history chorea.	Mitral insufficiency.	Tonsils: Enlarged; adherent; infected. Adenoids: Small; chronically infected; discharge. Ears: Not infected. Nose: No sinus infection. Teeth: Gingivitis; caries. Cervical glands: Enlarged at angles jaw; tender. Just palpable in posterior triangles.	98.6
S. M. 36430. Male.	W	14		Frequent tonsillitis. Has had five or six attacks acute polyarthritis during past 3 years. Frequent frontal headache; chronic supp. otitis media; swelling glands left side neck. Dyspnœa on exertion for past year; also edema feet and ankles 1 year at frequent intervals.	Mitral insufficiency.	Tonsils: Enlarged; adherent to pillars. Adenoids: Enlarged. Teeth: Carious. Sinuses: Not infected. Ears: Chronic supp. otitis media. Cervical glands: Size walnut angle jaw left; enlarged in other triangles.	
D. S. 37036. Female.	W	9		Frequent tonsillitis. Has had three attacks of multiple arthritis. Chorea after last attack. Complains pain over heart. Dyspnœa on exertion.	Mitral insufficiency.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Carious. Sinuses: Not infected. Cervical glands: Enlarged in anterior and posterior triangle.	99.5
H. W. 37212. Male.	W	13	Factory.	Occasional sore throat. Has had one attack of multiple arthritis 1 month ago involving hips, knees, ankles. Joints swollen, hot, red, very painful. No history chorea.	Mitral insufficiency.	Tonsils: Enlarged; adherent to pillars. Adenoids: Very large. Teeth: Good. Sinuses: Not infected. Cervical glands: Enlarged in anterior and posterior triangles.	99

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Slight glandular enlargement. Heart: Slightly enlarged; definite mitral lesion. Lungs: Clear on perc. and ausc. Urine: Normal. R. B. C.: 4,900,000. W. B. C.: 13,600. Hb.: 95%.	June, 1914. Chronic tonsillitis. Rheumatic fever. Heart lesion. (Nasal operation also.)	None.	Oct., 1915. No recurrence of joint symptoms. No colds or sore throat during past winter. Heart: Well compensated lesion. Nose and throat look normal.
General glandular enlargement. Lungs: Normal. Urine: Trace albumin; no casts; no blood. R. B. C.: 5,600,000. W. B. C.: 4750. Hb.: 95%. Culture from tonsils after removal; streptococcus hemolyticus.	June, 1914. Frequent tonsillitis. Rheumatic fever. Pericarditis. Myocarditis.	None.	July, 1914. Three weeks after tonsillectomy had relapse with return of joint symptoms, and alarming myocardial insufficiency; slowly recovered. Feb., 1916. General health excellent since Aug., 1914. Has had no sore throat, nor any return of joint symptoms. The cervical glands are still enlarged on both sides. Aug., 1916. Joints all normal. General health excellent.
General glandular enlargement. Axillary glands tender. Lungs: Clear on perc. and ausc. Urine: Normal.	Aug., 1914. Frequent tonsillitis. Rheumatic fever. Heart lesion.	None.	April, 1915. General health excellent; growing rapidly. Joints all normal. No dyspnœa on running, as before. Nasopharynx and throat normal. Heart: Loud systolic murmur heard in axilla and over back. Aug., 1915. Glands in anterior triangles not palpable; just felt in posterior triangles. Joints normal. Liver and spleen not palpable. Heart: The systolic murmur is soft, blowing in character; heard loudest at P. M. I.; transmitted to axilla and back. Cardiac dullness extends 8½ cm. to left in 5 i. s.; to sternal border in 4 i. s. Pulse: Regular.
Slight general glandular enlargement. Heart: Enlarged to left. Systolic murmur at apex, axilla and back. Lungs: Clear on perc. and ausc. Urine: Normal.	Oct., 1914. Chronic tonsillitis. Rheumatic fever. Heart lesion. Arthritis. (Extraction carious teeth.)	None.	Aug., 1915. No recurrence arthritis. Joints all normal at present. No chorea. No sore throat or cold since operation. No shortness of breath; can take exercise like other children. Goes to school regularly for the first time in her life. Cervical glands not palpable. Teeth, nose, throat, ears all look normal.
Glands, axillæ, groins, epitrochlears enlarged. Lungs: Normal. Urine: Normal. Is a pale, slender, æmic looking child.	Nov., 1914. Frequent tonsillitis. Rheumatic fever. Chronic supp. otitis media double. Mouth-breather. Heart lesion.	None.	April, 1915. Has gained weight. General health good. No sore throat and no joint symptoms since operation. Has no dyspnœa on exertion. Glands neck just palpable. Ears: No discharge; drums intact; hearing within normal limits. Teeth: Carious (referred to dentist). Heart: As before. Aug., 1915. Discharge in nasopharynx due to infection right antrum (X-ray: Clouding right antrum). Teeth still in bad shape. Glands: Chain in each posterior triangle about ½ cm. in diameter; smaller in anterior triangles. Chronic hyperplastic pharyngitis. (Irrigation antrum.) Heart: P. M. I. in 4 s. 5.3 cm. to left mid-sternal line; right heart 1.5 cm. to right sternum. P^2 accentuated. No thrill. Blowing systolic murmur, maximum at apex, transmitted to axilla and back.
Slight general glandular enlargement. Lungs: Clear on perc. and ausc. Urine: Albumin; no casts; no R. B. C. Bradycardia: Pulse 50 to minute, but regular and strong.	Jan., 1915. Frequent tonsillitis. Rheumatic fever. Arthritis. Heart lesion. (Nasal operation also.)	None.	Sept., 1915. No improvement in condition of back; other joints still stiff, and at times painful. Still has tinnitus. (Advised operation on sinuses.)
General glandular enlargement. Lungs: Few râles heard over both lungs; slight impairment at apices. Pirquet: Positive. (No histological evidence of Tbc. in tonsils or adenoids.) Urticarial rash fading. Blood culture negative.	Jan., 1915. Urticaria. Rheumatic fever. Arthritis. Heart lesions.	None.	Oct., 1915. Glands in neck still slightly enlarged on both sides. Hypertrophic pharyngitis, otherwise throat and nasopharynx normal. Sinuses: Clear. General condition good. April, 1915. Heart: 9 cm. to left in 5 s.; 2 cm. right in 4 s. Pulse 84. Blowing diastolic murmur at aortic area after exertion. No thrill. June, 1916. General condition good. No glandular enlargement. Lungs clear on posterior and anterior. Heart: 8 cm. to left in 5 s.; 2 cm. to right in 4 s. Sounds clear at apex.
Slight general glandular enlargement. Heart: Enlarged to left; definite mitral lesion. Lungs: Clear on perc. and ausc. Urine: Albumin; no casts; no blood. W. B. C.: 10,700. Hb.: 79%.	Jan., 1915. Chronic tonsillitis. Rheumatic fever. Chronic arthritis. (Referred to dentist.)	None.	June, 1915. Joint condition has gradually improved; for past 3 months walks normally; no pain; occasional stiffness. Cervical glands not palpable on either side in anterior triangles. Throat normal with exception of hypertrophic pharyngitis. Nasopharynx: Normal. Nose normal. Heart: Enlarged; 11½ cm. to left mid-line; 4 cm. right. Blowing systolic murmur at apex, over sternum and in axilla. P^2 accentuated. Liver not enlarged. Pulse regular.
General glandular enlargement. Lungs: Clear on perc. and ausc. Urine: Albumin and casts. Phthalein: 58% for 1st h.; 10% for 2d h. R. B. C.: 4,200,000. W. B. C.: 11,600. Hb.: 72%. Differential blood count; normal.	Feb., 1915. Chronic tonsillitis. Rheumatic fever. Heart lesion. Otitis media. (Extraction carious teeth.)	Acute flare-up of arthritis involving right shoulder, elbow, wrists and fingers. Gradually subsided.	July, 1915. Recurrence acute arthritis 1 month ago; not so severe as usual, was in bed for a week. No headaches since tonsillectomy. Ears: Drums intact; hearing good. Teeth: Good. Cervical gland on left is barely palpable; measures about 1 cm. in diameter. Heart: P. M. I. in 5th s. 7½ cm. left of mid-line; right border 2 cm. right mid-line. Systolic murmur heard all over back. No thrill. Pulse: Regular, 96 to minute. Liver: Slightly enlarged. Spleen: Not palpable. No general glandular enlargement.
Lungs: Clear on perc. and ausc. Heart: Enlarged; blowing systolic murmur apex, axilla and back. Urine: Normal.	May, 1915. Chronic tonsillitis. Heart lesion. Rheumatic fever.	None.	May, 1916. Joints normal. No recurrence rheumatic fever or chorea since operation. No pain over heart. No dyspnœa. General condition excellent. Heart: Left border 7 cm. left mid-line; right border 1 cm. right of sternal margin. Systolic murmur as before.
Lungs: Clear. Heart: Enlarged; systolic murmur apex, heard in axilla. Urine: Normal. R. B. C.: 4,700,000. W. B. C.: 5600. Hb.: 77%.	June, 1915. Chronic tonsillitis. Heart lesion. Rheumatic fever.	None.	Nov., 1915. Joints normal. No recurrence arthritis since operation. Works regularly. Cervical glands not palpable. Throat: Normal. Heart: Murmur as before. Pulse 90, regular. Oct., 1916. No recurrence rheumatic fever or arthritis. Works regularly.

TABLE VI.— REMOVAL OF TONSILS AND ADENOIDS FOR SYDENHAM'S CHOREA

I. Cases between 1 and 5 Years of Age.

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
A. L. 30988. Female.	W	5		Frequent sore throats for past 3 years. Onset chorea 2 months ago; never arthritis. Twitching in both arms and face; less marked legs. Speech thick.	Mitral insufficiency.	Tonsils: Much enlarged; crypts filled with yellowish plugs of debris. Teeth: Many carious. Nose: Negative aside from discharge due to adenoids. Ears: Normal. Nasopharynx: Large mass adenoids. Cervical glands; all enlarged.	98.6
S. A. 35735. Female.	W	5		No history sore throat; colds infrequent. Onset 2 weeks ago with multiple arthritis affecting hips, both ankles and left elbow. Irregular jerking movements in hands, arms and legs.	None.	Tonsils: Much enlarged. Nasopharnyx: Large adenoids; mouth-breather. Discharge from nose. Teeth: Good. Ears: Not infected. Cervical glands: Enlarged particularly at angles jaw; also in posterior triangles.	98.8
M. K. 37441. Female.	W	4		No history of sore throat; was in Robert Garrett Hospital for 2 months with acute chorea. No arthritis. No heart lesion. Both hands, arms and legs involved; jerky, irregular movements. Eczema; no history asthma.	None.	Tonsils: Not particularly enlarged. Nasopharynx: Adenoids; mouth-breather. Teeth: Good. Ears: Normal. Nose: Slight discharge due to adenoids. Cervical glands: Enlarged at angles jaw and in posterior triangles. Has eczema behind left ear.	99
B. M. 35464. Female.	W	3		Has had tonsillitis once or twice. First attack tonsillitis in 1910.	None.	Tonsils: Enlarged. Adenoids: Very large mass. Teeth: Many carious. Cervical glands: Visible on inspection at angles jaw.	99

II. Cases between 6 and 10 Years of Age.

J. R. 30827. Male.	C	7		History frequent attacks tonsillitis. First attack chorea in 1910. Was treated in dispensary of the Johns Hopkins Hospital.	None.	Tonsils: Much enlarged. Nasopharynx: Large mass adenoids. Cervical glands: Enlarged on both sides in anterior triangles.	99.5
R. B. 30417. Male.	W	9		Very indefinite history of tonsillitis. Is mouth-breather. Has frequent "colds." Is just recovering from fourth attack of chorea. Has marked difficulty in articulating. History of weakness one leg and arm.	None.	Tonsils: Small; atrophic; adherent to pillars. Adenoids: Large; discharge from nasopharynx. Teeth: Good. Nose: Normal aside from discharge due to adenoids. Ears: Normal. Cervical glands: Slightly enlarged in anterior and posterior triangles.	98
E. C. 30828. Female.	W	7		Frequent tonsillitis; three or four attacks a year for past 2 years. Has had two attacks acute rheumatic fever; the last about 1 year ago. Joints all clear at present. Chorea, both arms and legs, at intervals for 2 years. Jerking at present.	Mitral insufficiency.	Tonsils: Very large; especially r i g h t; chronically infected. Nasopharynx: Adenoids enlarged; infected; adenoid facies; mouth-breather. Teeth: Carious. Ears: Not infected; hearing good. Cervical glands: Enlarged at angles jaw, particularly on right.	99.6
H. G. 30953. Male.	W	8	School.	Frequent "colds"; occasional sore throat; mouth-breather. Tonsillitis about 2 months ago followed by irregular jerking of muscles of face, and both upper arms. No history similar trouble previous to this attack. Has headaches, probably due to eyes. No arthritis.	None.	Tonsils: Much enlarged. Nasopharynx: Adenoids m u c h enlarged; mouth-breather; adenoid facies. Ears: Normal. Nose: Normal aside from discharge due to adenoids. Teeth: Carious. Cervical glands: Enlarged at angles jaw; smaller in posterior triangles.	98.6
R. A. 29279. Male.	W	8	School.	History occasional sore throat and coryza. Acute rheumatic fever 2 years ago. Onset gradual 1 month ago, with jerking of arms, legs, and face. Pains in all of larger joints of arms and legs; some swelling of affected joints. Drags left leg on walking for 3 weeks. Speech very much impaired.	Mitral insufficiency.	Tonsils: Very large; adherent to pillars. Nasopharynx: Large mass adenoids; mouth-breather. Teeth: In good condition. Nose: Normal aside from discharge due to adenoids. Ears: Not infected. Cervical glands: Enlarged in all triangles.	98.6
M. A. 33218. Female.	W	9	School.	Tonsillitis every winter since 2 years of age; frequent "colds." Has had three attacks of chorea; no symptoms at present. Acute rheumatic fever 8 months ago with heart lesion resulting. Joints normal at present.	Mitral insufficiency.	Tonsils: Very large; adherent to pillars; crypts filled with yellowish debris. Teeth: Carious. Nose: Deflected septum to left; discharge on both sides. Ears: Chronic catarrhal otitis media. Nasopharynx: Large, infected adenoids; mouth-breather. Cervical glands: Much enlarged both anterior triangles.	99
I. M. 33489. Female.	W	10	School.	Tonsillitis 6 weeks ago followed by chorea; still has choreiform movements of arms, legs and face. Also pains and stiffness in joints.	Mitral insufficiency.	Tonsils: Small; fibrous; adherent to pillars. Teeth: Good condition. Nose: Normal. Ears: Drums retracted. Nasopharynx: Adenoids have been removed. Cervical glands: Slightly enlarged at angles jaw.	
B. G. 34743. Female.	W	10	School.	Frequent attacks tonsillitis. No history arthritis. Choreiform movements of arms and legs at present. No history heart trouble. Is very nervous and irritable.	June, 1914, none. Feb., 1915, mitral insufficiency.	Tonsils: Not enlarged; densely adherent to pillars. Teeth: Carious. Ears: Normal. Nose: Good breathing space. Nasopharynx: Large mass adenoids; mouth-breather. Cervical glands: Enlarged at angles jaw.	99

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

I. CASES BETWEEN 1 AND 5 YEARS OF AGE.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Marked general glandular enlargement. Heart: Enlarged; systolic murmur heard in axilla and back. Lungs: Clear. Spleen: Enlarged. Retrosternal dullness; X-ray diagnosis: Persistent thymus. Urine: Trace albumin; no casts found. R. B. C.: 4,900,000. W. B. C.: 14,400. Hb.: 80%.	Nov., 1912. Chorea. History sore throat. Mouth-breather. Mitral insufficiency.	Elevation of temperature to 101° F., and pulse 145 for 2 days; rapidly returned to normal. (Blood culture negative.)	May, 1913. No evidence of chorea since operation. Mother says child is much less nervous. Throat, nasopharynx and nose look normal. Glands of neck, axilla, groins much smaller. Temperature normal. Jan., 1914. Admitted to hospital with acute chorea; arthritis; elevated temperature; dilatation of heart. Succumbed a few day later. No autopsy.
General glandular enlargement. Heart: Not enlarged; systolic murmur at apex and left sternal border, not transmitted. Lungs: Clear. Urine: Normal. R. B. C.: 5,500,000. W. B. C.: 21,600. Hb.: 92%. Purpura on lower legs.	Nov., 1914. Enlarged tonsils. Mouth-breather. Cervical adenitis. Chorea. Infectious arthritis. Purpura.	None.	April, 1915. Joints normal for past 4 or 5 months. No return of chorea which completely disappeared soon after operation. The cervical glands are just palpable; a little larger on right side. Heart normal. Throat looks normal. Still discharge from nose particularly left. July, 1915. Returns on account lump at angle jaw on left; noticed for 2 months. Is slightly tender, firm, movable; measures 2 x 3 cm. Glands in posterior triangles and on right are barely palpable. Pirquet test: Negative. Still some nasal discharge. Joints normal. No return of chorea. Appetite excellent; has gained weight. Temperature normal. Heart and lungs normal. Urine normal.
No general glandular enlargement. Heart: Normal. Lungs: Normal. Urine: Normal.	July, 1915. Chorea. Cervical adenitis. Mouth-breather. (Referred to skin department for eczema.)	None.	Nov., 1915. No return of any of the symptoms of chorea. Glands neck much smaller. Throat and nasopharynx look normal with exception of hypertrophic pharyngitis. Oct., 1916. No recurrence of chorea. Mother states child has had no symptoms of nervousness since operation. General health good. Is gaining weight.
Mouth-breather. Deformity of chest due to adenoids. Heart and lungs: Clear. Urine: Clear.	Oct., 1914. Chronic tonsillitis. Cervical adenitis. Chorea.	None.	Nov., 1915. No recurrence chorea. General health good. Nose, throat and ears look normal. Cervical glands still palpably enlarged; size lima bean on right; smaller on left at angle jaw. Nov., 1916. No recurrence chorea. "Perfectly well since operation."

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.

Heart and lungs: Clear. Urine: Normal.	Nov., 1912. Chronic tonsillitis. Cervical adenitis. Chorea.	None.	Nov., 1916. Has occasional symptoms of chorea at intervals since operation, but mother says "nervousness" is much improved. Does not articulate clearly. General health good. Teeth: Carious; alveolar abscess. Cervical glands just palpable. Nose, throat and ears look normal aside from teeth.
Slight general glandular enlargement. Heart: Not enlarged. A murmur (systolic) heard at apex. Not transmitted. Lungs: Normal. Urine: Normal. W. B. C.: 8200. Hb.: 80%.	Aug., 1912. Repeated attacks chorea. Small, fibrous tonsils. Mouth-breather.	None.	Mar., 1914. Had another attack acute chorea; died in St. Agnes' Hospital. No autopsy.
General glandular enlargement. Heart: Slightly enlarged; loud, rough systolic murmur at apex; heard in axilla and over back. Lungs: Normal. Urine: Normal.	Nov., 1912. Frequent tonsillitis. Acute rheumatic fever. Chorea.	None.	May, 1913. No recurrence of joint symptoms or chorea. General health and appetite much improved. Nose, nasopharynx and throat look normal aside from hypertrophic pharyngitis. Glands neck barely palpable. Heart: Normal size; very faint systolic murmur. Mar., 1914. In perfect health since tonsillectomy. Joints normal. No recurrence chorea. Glands neck not palpable; those in groin and axillæ just felt. Spleen not palpable. Heart: No evidence of any lesion; not enlarged; no murmur.
General glandular enlargement. Heart: Normal. Lungs: Normal. Urine: Normal. W. B. C.: 9300. Hb.: 92%.	Nov., 1912. History tonsillitis. Mouth-breather. Chorea. (Referred to oculist.) (Extraction carious teeth.)	Bleeding from nasopharynx at intervals for a week. Very difficult to control with packing. Marked secondary anæmia; Hb. from 92% to 40%.	July, 1915. No recurrence of chorea. Is still having trouble with eyes. Is a well-grown, healthly looking boy. Heart normal. Glands: Barely palpable in neck, axillæ and groins. Hypertrophic pharyngitis, otherwise throat normal. Still carious teeth.
Marked general glandular enlargement. Axillary glands on left being 2 cm. in diameter. Heart: Enlarged to right and left; systolic murmur at apex heard in axilla and back. Also a proto-diastolic gallop at apex. Lungs: Clear on perc. and ausc. Urine: Clear. Erythema multiforme. R. B. C.: 5,400,000. W. B. C.: 5400. Hb.: 82%.	Feb., 1912. Chronic tonsillitis. History rheumatic fever. Chorea. Heart lesion.	None.	April, 1915 (over 3 years after operation). Has been in perfect health. No recurrence of chorea or arthritis. Cervical glands still slightly enlarged on left; not palpable on right in anterior triangle. Nose and throat look normal. Is now a well-nourished and well-developed boy. No subcutaneous nodules felt. Heart: Slightly enlarged, but no murmurs to be heard.
Marked general glandular enlargement. Heart: Enlarged to left; systolic murmur at apex; transmitted to axilla and back. Dyspnœa: On exertion. Lungs: Clear. Urine: Normal. R. B. C.: 5,000,000. W. B. C.: 12,400. Hb.: 70%.	Nov., 1913. Chronic tonsillitis. Cervical adenitis. Acute rheumatic fever. Chorea. Heart lesion. (Extraction carious teeth.)	None.	Feb., 1914. Admitted to hospital with recurrence chorea; chiefly in one hand. Heart as before. No return of arthritis. Teeth carious. Cervical glands enlarged. Spleen palpable. Feb., 1915. Admitted with second recurrence chorea; mild attack. No joint symptoms. Chorea cleared up after six weeks in bed. Nov., 1915. Since discharge from hospital in Mar., 1915, general health has been excellent. No joint or chorea symptoms. Heart as before.
No general glandular enlargement. Heart: Enlarged; mitral insufficiency. Lungs: Clear on perc. and ausc. Urine: Normal. W. B. C.: 12,200. Hb.: 82%.	Dec., 1913. History tonsillitis. Chorea. Heart lesion.	None.	Jan., 1914. No recurrence chorea. Very nervous. Still complains of joints. April, 1915. Vague pains in limbs and chest. Examination negative aside from old heart lesion. Heart not enlarged. Aug., 1915. Complaint and physical examination about same as last note. One enlarged gland at angle jaw on each side; not enlarged in posterior triangles. Sinuses clear. No recurrence of chorea.
No general glandular enlargement. Heart: 7 cm. to left mid-line; 1½ cm. to right mid-line. Systolic murmur; loudest at apex but heard along left sternal border; not transmitted. Lungs: Impaired percussion note left upper; no râles. Urine: Normal.	June, 1914. Chronic tonsillitis. Cervical adenitis. Chorea.	None.	Oct., 1914. Choreiform movements ceased soon after leaving hospital; well for 3 months. Recurrence 1 month ago. Is undernourished; pale; very irritable. No colds or sore throat to which recurrence can be attributed. Feb., 1915. Admitted hospital with acute chorea and endocarditis. Heart enlarged; loud, rough systolic murmur at apex and transmitted to axilla and back. Blood culture negative. Mar., 1915. Choreiform movements persist. Heart smaller; otherwise as before. No arthritis. Aug., 1915. No chorea at present; very nervous, excitable and irritable. Throat looks normal. No sore throat since June, 1914.

TABLE VI.—REMOVAL OF TONSILS AND ADENOIDS FOR SYDENHAM'S CHOREA

II. Cases between 6 and 10 Years of Age—Continued.

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion.	Special Examination.	Temp. (Mouth) on Day Before Operation. ° F.
M. H. 35134. Female.	W	10	School.	Frequent tonsillitis for several years. Mouth-breather; very backward in school. Always a "nervous child." About 6 weeks ago twitching of arms, legs and face first noticed. No arthritis.	None.	Tonsils: Meeting in mid-line; left is particularly adherent to pillars. Nasopharynx: Large mass adenoids; adenoid facies; chronic discharge from nose; mouth-breather. Teeth: No note. Ears: Chronic catarrhal otitis media. Cervical glands: Slightly enlarged angles jaw.	98.6
M. D. 36561. Male.	W	9	School.	Frequent tonsillitis; mouth-breather; frequent earache; croup; cough for past 4 or 5 years. Acute mastoiditis with sinus thrombosis in Feb., 1913. First attack chorea followed this ear infection; gradually cleared up. No heart lesion; no arthritis. Is very nervous.	None.	Tonsils: Not enlarged; adherent to pillars. Adenoids: Were removed in Feb., 1913. Ears: Normal; hearing good. Teeth: Carious. Cervical glands: Enlarged; measure about 2 x 5 cm. at angle jaw on each side.	98.2
M. P. 34291. Female.	W	10	School.	History occasional tonsillitis; frequent "colds." Acute rheumatic fever 2 years ago; all joints swollen, red, very painful. Second attack rheumatic fever 4 months ago with involvement of all joints; pain around heart and shortness of breath. Was in bed for nearly 3 months. No history chorea.	Mitral insufficiency. Pericarditis with effusion.	Tonsils: Much enlarged; irregular surface; adherent to pillars. Teeth: Carious. Ears: Not infected. Nose: Normal. Nasopharynx: Large mass adenoids. Cervical glands. Enlarged in all triangles.	99.2

III. Cases between 11 and 15 Years of Age.

L. D. 28789. Male.	C	12		Epidemic meningitis in June, 1911; recovery without apparent injury to C. N. S. Acute tonsillitis at frequent intervals; attack 6 weeks ago followed by acute chorea; pericarditis; multiple arthritis; endocarditis.	Mitral insufficiency. Pericarditis.	Tonsils: Very large; crypts filled with foul smelling yellowish debris; adherent to pillars. Adenoids: Large mass; mouth-breather. Teeth: Two carious; others good. Nose: Normal. Ears: Normal. Cervical glands: Enlarged in all triangles; especially right.	99
J. M. 30923. Male.	W	11	School.	No history tonsillitis. In 1910 was in hospital with acute endocarditis and chorea. In Oct., 1912, was admitted with acute chorea, and polyarthritis. Was thought advisable to remove tonsils as a prophylactic measure.	Mitral insufficiency. Mitral stenosis?	Tonsils: Not enlarged. Adenoids: Very small amount. Nose: Clear; no sinus infection. Ears: Normal. Teeth: Excellent. Cervical glands: Just palpable.	99.4
C. C. 31049. Female.	W	15	School.	Frequent colds and sore throats for past 10 years. Mouth-breather. History chorea at intervals for several years. Is at present recovering from an attack of acute rheumatic fever with multiple arthritis and recurrence of chorea.	Mitral insufficiency.	Tonsils: Enlarged; adherent to pillars. Adenoids: Large mass; chronically infected. Teeth: Carious. Ears: Normal. Cervical glands: Enlarged in all triangles.	99
R. F. 31749. Male.	W	15	School.	Infrequent tonsillitis, but frequent cold in head. Chorea for 1 year; twitching of face, arms, legs. Unable to write as well as usual. No arthritis. Has choreiform movements of arms and face at present.	None.	Tonsils: Small; embedded; adherent. Nasopharynx: Large mass adenoids; discharge from nose and in throat. Ears: Normal. Nose: Deflected septum; no sinus infection. Cervical glands: Just palpable.	98.2
E. S. 32106. Female.	W	12	School.	No history tonsillitis, but child has frequent "colds," and swelling of glands neck. First attack chorea 6 months ago; cleared up 1 month ago. No arthritis.	None.	Tonsils: Small; adherent to pillars; fibrous. Teeth: Good. Nose: Hypert. inf. turb.; otherwise normal. Ears: Normal. Nasopharynx: Infected adenoids; discharge. Cervical glands: Enlarged slightly at angle jaws; not enlarged in posterior triangles.	98.4
D. S. 34202. Female.	W	11	School.	History of only one attack tonsillitis. Was operated on for empyema in this hospital 1 year ago; at that time heart was normal. Had chorea 6 months ago which has entirely disappeared. At this time was quite sick for several weeks. High fever. Was treated by family doctor. Was evidently acute endocarditis. No history arthritis.	Mitral insufficiency.	Tonsils: Much enlarged. Adenoids: Have been removed. Ears: Normal. Teeth: Good. Nose: No sinus infection. Cervical glands: Enlarged, particularly at angles jaw.	99
E. W. 34453. Male.	W	14	School.	History occasional sore throat; frequent colds. Has had two attacks chorea. The first attack chorea when 9 years of age; has had difficulty in articulating since this time. Is just recovering from the second attack. Legs, arms, face involved. No arthritis.	None.	Tonsils: Much enlarged; crypts filled with yellowish debris. Teeth: Very bad; alveolar abscesses. Adenoids: Have been removed. Nose: No sinus infection. Ears: Normal. Cervical glands: Large glands at angle jaw on right; enlarged in all triangles. Vocal cords: Move normally.	98.4
M. P. 37443. Female.	W	13	School.	History frequent tonsillitis. Following last attack had enlarged and tender glands neck; pain, stiffness, swelling of knees and ankles; jerking of muscles of arms and face. Onset about 5 week ago.	None.	Tonsils: Much enlarged; adherent. Nose: Septum dev. to left. Ears: Normal. Teeth: Carious. Cervical glands: Enlarged in all triangles.	98
D. B. 37442. Female.	W	15	School.	Frequent tonsillitis since early childhood. Tonsils "clipped" five times. Complains of general weakness, palpitation, loss appetite, and enlarged cervical glands. Chorea with palsy entire right arm and leg 2 years ago. At that time diagnosis mitral insufficiency was made by family physician.	Mitral insufficiency.	Tonsils: Enlarged; much scar tissue; very adherent to pillars. Adenoids: Small amount, chronically infected. Ears: Normal. Nose: Slight hypert. both inf. turbinates. Teeth: Good. Cervical glands: Much enlarged at angles jaw; less large in posterior triangles.	99

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.—Continued.

General Physical Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative. Complications.	Subsequent Examination.
No general glandular enlargement. Heart: Normal. Lungs: Normal. Urine: Normal.	Aug., 1914. Chronic tonsillitis. Chorea.	None.	July, 1915. No recurrence of chorea. Better health than ever before; has gained 12 pounds; appetite good; "progress in school more rapid in past year than in previous 2 years." No colds or sore throats since operation. (Note.—Benefit probably due largely to removal of adenoids.)
No general glandular enlargement. Heart: Normal. Lungs: Impaired percussion note left apex; no râles. Pirquet: Negative. Urine: Normal.	Mar., 1915. Chronic tonsillitis. Cervical adenitis. Chorea. (Referred to dentist.)	None.	June, 1915. Glands at angle jaws measure 1½ x ½ cm. Teeth carious. Throat normal looking. Has attacks in which he becomes very pale, after which he lies down and sleeps for an hour or more. (Petit mal?) Feb., 1916. Recurrence chorea; palsy left arm and leg. In bed for 3 months; gradually cleared up. No heart or joint lesion.
General glandular enlargement. Heart: Enlarged to left and right. Systolic murmur transmitted to axilla and back. Lungs: General infiltration (X-ray). Very few physical signs. Urine: Normal aside from trace albumin. Liver: 2 cm. below c. m. Spleen: Palpable. R. B. C.: 4,000,000. W. B. C.: 15,600. Hb.: 50%. (Culture from tonsils after removal. Strep. hæmolyticus.)	April, 1914. Chronic tonsillitis. Heart lesion. Pericarditis. Acute rheumatic fever. Secondary anæmia.	None.	Feb., 1915. Has had two attacks chorea since operation; none before operation. No recurrence of arthritis. Heart: Enlarged; dyspnœa. No friction rub heard. Aug., 1915. No recurrence of chorea. General health better than ever before. No evidence of arthritis. Heart: Well compensated. Has discharge from left ear of 1 week's duration; otherwise nose, throat, and nasopharynx normal. Hypertrophic pharyngitis.

III. CASES BETWEEN 11 AND 15 YEARS OF AGE.

Marked general glandular enlargement. Lungs: Clear on perc. and ausc. Urine: Normal aside from trace albumin. R. B. C.: 4,500,000. W. B. C.: 4500. Hb.: 75%. Blood culture negative.	Nov., 1911. Chronic tonsillitis. Chorea. Mitral insufficiency. Pericarditis.	None.	Mar., 1913. Patient died a week ago at his home. Apparently another acute attack rheumatic fever; had polyarthritis; great dyspnœa, etc. No autopsy.
Slight general glandular enlargement. Lungs: Clear on perc. and ausc. Heart: Enlarged. Systolic murmur well transmitted. Presystolic thrill; crescendo late diastolic murmur. R. B. C.: 4,900,000. W. B. C.: 14,000. Hb.: 92%. Spleen enlarged. Blood culture negative.	Nov., 1912. No definite indication; was done as a prophylactic measure. Heart lesion. Chorea. Polyarthritis.	None.	June, 1915. No recurrence of arthritis; joints all normal. Still very nervous and jerky, particularly noticeable in writing; occasionally this jerking becomes much worse. Cervical, axillary and inguinal glands all slightly enlarged. Spleen not felt. Liver not enlarged. Heart: Left border is 7 cm. from median line; not enlarged to right. Systolic retraction at apex impulse. Sounds at apex and base are normal. No murmurs are heard, either systolic or diastolic.
General glandular enlargement. Spleen palpable. Lungs: Clear on perc. and ausc. Heart: Enlarged; definite mitral insufficiency. Urine: Clear. Thyroid: Enlarged.	Dec., 1912. Chronic tonsillitis. Heart lesion. Arthritis. Chorea. (Extraction carious teeth.)	None.	Nov., 1915. No recurrence of chorea. Arthritis cleared up in all joints except fingers and jaw; patient thinks these joints are gradually becoming worse. At present can eat only soft diet; teeth can be separated only about 1 cm. Heart: As before except it is smaller. Sinuses all clear on examination and X-ray.
No general glandular enlargement. Spleen not felt. Lungs and heart: Normal. Urine: Normal.	Mar., 1913. Chronic tonsillitis(?) Chorea.	None.	Nov., 1915. Still has twitching of muscles around eyes and forehead (looks like habit spasm); otherwise no evidence of chorea. Throat looks normal with exception chronic hypertrophic pharyngitis. No headache. Ears normal. Heart is normal.
No general glandular enlargement. Heart and lungs: Normal. Urine: Normal.	May, 1913. Chronic tonsillitis. Infected adenoids. Chorea.	None.	April, 1914. Has had three attacks of chorea since operation; all involve right arm and leg chiefly. General health improved; has gained in weight. No colds or sore throats. Throat looks normal. Cervical glands just palpable. Heart normal. Aug., 1915. Has had two attacks chorea since last note; still twitching of arms and legs. Very irritable, restless and nervous. Nose, throat, ears, cervical glands all normal. No evidence of cardiac involvement.
General glandular enlargement. Spleen enlarged. Lungs: Evidence of old empyema trouble. Heart: Enlarged to left; definite mitral lesion. Urine: Clear. W. B. C.: 9200. Hb.: 85%.	Mar., 1914. Chronic tonsillitis. Heart lesion. Chorea.	None.	Feb., 1915. No recurrence of chorea. Frequent colds, cough, expectoration (bronchiectosis?). Oct., 1915. General health much improved. Cervical glands not palpable. Throat looks normal. Heart: Left border heart 8.2 cm. left median line; right is 1½ cm. to right median line. Blowing systolic murmur at apex, transmitted into axilla. Pulse 72, regular. Thyroid enlarged. No recurrence of chorea.
Slight general glandular enlargement. Heart and lungs: Normal. Urine: Clear. (Culture from tonsils after removal, Staphylococci.)	April, 1914. Chronic tonsillitis. Chorea. (Extraction infected teeth.)	None.	May, 1914. Chorea much worse than at time of operation. Oct., 1915. Chorea not improved. Speech difficulty; twitching legs and arms. Cervical glands not palpable. Teeth in poor condition. Chronic pharyngitis. Nose, nasopharynx, sinuses and larynx all look normal.
Slight general glandular enlargement. Heart and lungs: Normal. Urine: Normal.	July, 1915. Chronic tonsillitis. Cervical adenitis. Infectious arthritis. Chorea.	None.	Nov., 1915. No recurrence of chorea. All joint symptoms have cleared up entirely. No sore throat or coryza since operation. Glands in anterior and posterior triangles are not palpable. Throat and nasopharynx look normal. Oct., 1916. No recurrence of chorea. Cervical glands not palpable. General health good. Gaining in weight.
No general glandular enlargement. Heart: Enlarged to left; systolic murmur of greatest intensity at apex; transmitted to axilla and back. Lungs: Clear on perc. and ausc. Urine: Normal. Liver and spleen: Not enlarged.	July, 1915. Chronic tonsillitis. Cervical adenitis. Heart lesion. Chorea.	None.	Nov., 1915. No recurrence of chorea. General health much improved. Cervical glands are not palpable in either anterior or posterior triangles. Throat looks normal aside from hypertrophic pharyngitis. Nasopharynx and nose: Normal. Heart: Smaller; well compensated; otherwise as before. Nov., 1916. No recurrence of chorea.

TABLE VII.—RENAL GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR NEPHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion. Arthritis.	General Physical Examination.	Special Examination. Nose, Throat, Ears and Sinuses.
G. P. 29943. Female.	C	8		Following very severe tonsillitis and acute otitis media 8 months ago the cervical glands rapidly enlarged and suppurated. Shortly after this began to have headaches, abdominal pains, vomiting, swelling ankles and under eyes. Scars of old tbc. fistulæ on left side neck. History frequent tonsillitis and coryza.	Mitral insufficiency. Tbc. arthritis left heel.	Ill looking, anæmic, poorly nourished. Edema ankles, face. Heart: Enlarged; mitral lesion. Lungs: Clear on perc. and ausc. aside from bronchial rales. Blood pressure: 125 mm. Hg. Blood: R. B. C., 3,200,000; W. B. C., 12,600; Hb., 40%. Temperature (evening) 100.2° F. Retrosternal dullness due to thymus or glands.	Tonsils: Enlarged; adherent to pillars; no ulceration. Adenoids: Very large; mouth-breather. Ears: Chronic suppurative otitis media right (possibly Tbc.). Teeth: Good. Nose: Normal aside from discharge; no sinus infection. Cervical glands: Typically tuberculous. (Microscopic examination: Tonsils after removal showed no tbc. lesion; adenoid sections lost.)
E. T. 32512. Female.	W	6		Comes to dispensary on account of frequent tonsillitis with high fever; mouth-breather; and enlarged glands on right side neck. No history of scarlet fever; always well aside from above trouble.	None.	General glandular enlargement. Cervical glands especially large at angle jaws. Heart and lungs: Clear. Eye grounds: Normal.	Tonsils: Much enlarged; adherent. Adenoids: Much enlarged; mouth-breather. Ears: Chronic catarrhal otitis media. Teeth: Carious. Cervical glands: Prominent on inspection; at angle jaw left measure 4 x 5 cm.
L. J. 37474. Male.	W	10		Is recovering from an attack of acute tonsillitis which was followed by acute nephritis and multiple arthritis. History headaches, vomiting, swelling face and ankles; and swelling, pain, stiffness of all joints, particularly knees, with above attack. Patient was treated by family physician; referred now for tonsillectomy. Never had scarlet fever.	No heart lesion. Multiple arthritis.	Walks with difficulty due to swelling in both knee joints; fingers also involved. Temperature 99° F. Throat still sore in A. M. Difficulty in breathing through nose. Heart: Slightly enlarged; systolic murmur over entire precordium; soft; not well transmitted. Lungs: Clear on perc. and ausc. Eye grounds normal. W. B. C.: 16,000. Hb.: 90%. Blood pressure 95 mm. Hg.	Tonsils: Enlarged; adherent. Adenoids: Large mass; infected. Ears: Chronic suppurative otitis media left. Teeth: Carious. Cervical glands: Enlarged at angle of jaws, and in posterior triangles.
S. S. 33967. Male.	W	12		Frequent attacks tonsillitis; chronic nasal discharge; mouth-breather. Is just recovering from an attack of acute nephritis. Had edema face, legs. Vomiting and abdominal pain.	None.	General glandular enlargement. Heart: No lesion; slightly enlarged. Blood pressure: Hypertension. Lungs: Clear on posterior and anterior. R. B. C.: 4,100,000. W. B. C.: 8200. Hb.: 57%. Wassermann and Calmette: Negative.	Tonsils: Small; embedded; densely adherent to pillars. Adenoids: Large mass. Teeth: Fairly good. Ears: Normal. Cervical glands: Enlarged in anterior and posterior triangles.
J. M. 34062. Male.	W	16	Box factory.	Frequent tonsillitis; impaired hearing right ear 4 years. Chronic nasal discharge. No scarlet fever. Facial palsy acute right. (Was advised 4 years ago to have tonsils removed on account frequent tonsillitis.)	None.	Heart and lungs: Negative. Blood pressure 114 mm. Hg. Wassermann: Negative. Lumbar puncture: Negative. Retinitis.	Tonsils: Enlarged. Adenoids: Large mass. Ears: Chronic otitis media. Cervical glands: Enlarged on both sides angle jaw.
L. T. 35493. Male.	W	16	School.	Frequent tonsillitis; frequent colds. Comes to dispensary on account nasal obstruction and nasal deformity due to injury. Has frequent nose bleeds. Never had scarlet fever.	None.	Lungs: Clear on perc. and ausc. Heart: Slightly enlarged; systolic blow, not transmitted. Liver and spleen not palpable. W. B. C.: 9800. Hb.: 95%. Evening temperature 99° F. Blood pressure 120 mm. Hg.	Tonsils: Small; imbedded; very adherent to pillars. Adenoids: Large mass. Ears: Not infected. Teeth: Pyorrhœa; caries. Cervical glands: Markedly enlarged at angle jaws on both sides. Nose: Deflected septum due to fracture; no sinus infection.
N. S. 36690. Male.	W	17		No history tonsillitis, but frequent "colds." Onset 4 days ago with fever, chills, pain in back and abdomen, vomiting, headache. Referred from medical department after 2 months in bed. Temperature still elevated in evening to 100 or 100.5° F.	None.	Lungs: Clear on perc. and ausc. Heart: Normal. Fundi: Normal. R. B. C.: 5,300,000. W. B. C.: 5000. Hb.: 80%. Calmette and Wassermann: Negative. General glandular enlargement.	Tonsils: Small; densely adherent to pillars. Marked chronic hypertrophic pharyngitis. Adenoids: Small; chronically infected; mucopurulent discharge. Ears: Not infected. Cervical glands: Enlarged at angles jaw; smaller but definitely enlarged in posterior triangles. Sinuses: Not infected.
R. R. 36881. Male.	W	12		Frequent tonsillitis. Chorea 5 years ago; affected arms; none for past 2 years. Frequent swelling glands neck. No history scarlet fever.	Mitral insufficiency. No arthritis. (Chorea.)	Heart: Enlarged to left; mitral insufficiency. Lungs: Clear on perc. and ausc. Pulse: Regular. Blood pressure: 110 mm. Hg.	Tonsils: Enlarged; especially left. Adenoids: Large mass. Ears: Chronic otitis media left. Sinuses: Clear. Teeth: Carious. Cervical glands: Enlarged.
R. McA. 38210. Male.	W	19	Clerk.	History occasional tonsillitis. Blood accidentally discovered in urine. No headaches; no edema; vision good; patient attributes onset to "malarial fever." Hematuria first noted 6 years ago. No history scarlet fever. No pain in back or legs.	None.	No general glandular enlargement. Heart and lungs: Normal. No evidence of malaria or of malarial organisms. Blood pressure: 125 systolic; 80 diastolic. R. B. C.: 4,800,000. W. B. C.: 20,000. Hb.: 80%. Differential count shows 82.5% P. m. n.	Tonsils: Small; embedded; adherent to pillars. Abscess at lower pole left tonsil discovered at operation. Adenoids: Small; chronically infected; discharge. Nose: No sinus infection. Ears: Normal. Teeth: Good. Cervical glands: No note.
T. M. 31038. Male.	W	47	Business.	Acute rheumatic fever at 16 and again at 25 years age. After last attack tonsils were "clipped" and for 20 years has been free from sore throat until present illness. Onset 10 months ago with acute tonsillitis, multiple arthritis and hematuria. After several months in Florida gradually improved. Another tonsillitis 3 months ago caused recurrence; and a third tonsillitis 1 month ago has made him much worse. Large sediment of blood in each voiding; practically all joints involved.	No heart lesion. Multiple arthritis.	Slight general glandular enlargement. Lungs: Clear on perc. and ausc. Heart: No organic lesion. Joints: Swollen, painful on motion. Blood pressure 120 mm. Hg. Eye grounds normal. Wassermann: Negative. Culture from tonsils after removal: Strep. viridans. (Green on blood agar. Coagulates milk. No capsule after passing through rabbits and mice.)	Tonsils: Slightly enlarged; densely adherent to pillars. Teeth: Not infected (X-ray). Nose: Chronic ethmoiditis right. Ears: Normal. Cervical glands: Enlarged and tender at angles jaw—particularly on right.
W. D. 32047. Male.	W	25	Student.	No history sore throat, or of frequent coryza. Tonsils partially removed 12 years ago. No symptoms of nephritis. Albumin, casts, blood found accidentally during examination for life insurance. No history scarlet fever.	None.	No general glandular enlargement. Heart: Systolic murmur mitral area; not enlarged. Lungs: Clear on perc. and ausc. Liver and spleen: Not palpable.	Tonsils: Small; imbedded; densely adherent to pillars; chronic abscess pocket at lower pole left tonsil. Adenoids: Large mass; infected. Ears: Normal. Teeth: Good (X-ray). Cervical glands: Enlarged at angles jaw, especially on right.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

Urinary Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Albumin: 5.5 gm. to liter. Casts: Many granular and blood. W. B. C. and R. B. C. Acid: 1013 sp. gr. Phthalein: 40% in 2 hours. Lactose: 24% in 4 hours; excretion completed 10 hours.	May, 1912. Frequent tonsillitis. Mouth-breather. Suppurated tbc. glands neck. Nephritis. Secondary anæmia. Heart lesion. (Incision, drainage tbc. glands neck.)	Temperature to 104° F. Gradually became normal. No change in urinary symptoms.	Patient died with acute nephritis in April, 1915.
Albumin: Trace. Casts: Granular and hyaline. Blood: None. No functional tests made.	July, 1913. Chronic tonsillitis. Cervical adenitis. Nephritis? (Referred to dentist.)	None.	Sept., 1915 (over 2 years after operation). General health excellent; has grown rapidly. No history of any of the symptoms of nephritis. No sore throat since operation; breathes normally. No headache. No general glandular enlargement. Cervical glands just palpable in anterior triangles; not enlarged in posterior triangles. Throat looks normal. Urine: Normal. No casts found.
Albumin: Large amount. Casts: Granular; hyaline; leucocyte. A few R. B. C. No functional test made.	July, 1915. Frequent tonsillitis. Mouth-breather. Otitis media. Cervical adenitis. Acute nephritis. Polyarthritis.	None.	Nov., 1913 (4 months after operation). Urine acid; faint trace albumin; sugar none; casts none; few red blood cells. Joints all normal. Heart: 2 cm. to right in 4 l. s.; to nipple line on left. Sounds clear. Pulse 80, regular. Lungs: Clear. Spleen not palpable. Cervical glands: On left at angle jaw measures 1 x 2 cm.; discrete; hard; movable. Smaller in other triangles. Still some carious teeth (referred to dental department). Drums intact; hearing good. Nov., 1916. Urine: Clear; sp. gr. 1022; acid; no sugar; no albumin; no casts; no R. B. C. General health is good.
Sp. gr. 1010 to 1020. Albumin: Large amount. Casts: Finely granular and blood. R. B. C. and W. B. C. Guiac: Positive. Phthalein: 2 hours 70%; 1st hour 50%; 2d hour 20%. Lactose: Delayed excretion; trace in 7 hours.	Feb., 1914. Frequent tonsillitis. Mouth-breather. Nephritis.	None.	April, 1915 (over 1 year after operation). Urine normal in every way. Heart slightly enlarged; otherwise normal. Blood pressure 110 mm. Hg. No general glandular enlargement. Cervical glands barely palpable. No illness of any kind since operation; no recurrence of swelling of face or ankles; no headache or vomiting. Eye grounds normal. Aug., 1915. Is still perfectly well. Urine normal. (Referred to dental clinic.) Aug., 1916. Urine examination: Clear; acid; sp. gr. 1010; no albumin; no sugar; Ep. cells and a few W. B. C. No casts or R. B. C. Subjectively is perfectly well.
Albumin: Present (2 gm. liter). Casts: Granular; leucocyte. R. B. C. and W. B. C. Guiac: Positive. Phthalein: 60% 1st hour; 10% 2d hour. Lactose: 40% in 2 hours.	April, 1914. Chronic tonsillitis. Chronic nephritis.	None.	Aug., 1916 (over 2 years after operation). Subjectively is perfectly well. Works regularly in box factory for past 1½ years. Vision good. No headaches. Urine: Clear; acid; 1015; albumin trace; sugar 0; no casts or R. B. C. found.
Albumin: 1.3 gm. to liter. Casts: Granular and leucocyte. No red blood cells seen. Guiac: Negative. Phthalein: 1st hour 60%; 2d hour 10%.	Oct., 1914. Chronic tonsillitis. Cervical adenitis. Nephritis. (Nasal operation also.)	None.	Aug., 1915. Urine: No albumin; no sugar; no casts, leucocytes or red blood cells. Lungs, heart, abdomen negative. Has had no sore throat or cold since operation. Eye grounds normal.
Sp. gr. 1030. Albumin: Large amount. Casts: Granular, blood, leucocyte. Phthalein: 75% in 2 hours.	May, 1915. Chronic tonsillitis. Chronic nasopharyngitis. Nephritis. (Referred to dentist.)	None.	Dec., 1915. Urine: No albumin; no sugar; no casts of any kind; no R. B. C. or W. B. C. Patient states that he has been in perfect health for past 6 months. Cervical glands are barely palpable. Throat and nasopharynx look practically normal; no discharge; chronic pharyngitis possibly due to smoking. (Again referred to dentist.)
Albumin: Present. Casts: Present. W. B. C. and R. B. C.	June, 1915. Chronic tonsillitis. Nephritis.	None.	Aug., 1916. Perfectly well. No recurrence chorea. No cardiac or renal symptoms. Urine: Sp. gr. 1010; acid; albumin 0; sugar 0; casts 0; no R. B. C. (Normal in every way.) Heart: P. M. I. in 4 s. 7 cm. left mid-line. There is a soft systolic murmur heard all over heart, loudest at apex. Not transmitted to axilla and back as in June, 1915. Throat, teeth, nose, ears all look normal. Cervical glands just palpable.
Cystoscopic examination showed blood coming from both kidneys, but more from right. No stone. Bacteriological examination: Negative. Sp. gr. 1020. Albumin: Trace. Many R. B. C.; few W. B. C. Phthalein (4 different tests): 1st hour 18 to 20%; 2d hour 18 to 20%. Blood urea .828 per 1000 cc.	Oct., 1915. Chronic tonsillitis. Hematuria.	None.	Oct., 1915. Within a week after the operation the amount of blood in urine has markedly decreased. May, 1916. Very small amount blood in urine; no longer evident on macroscopic examination. Has gained 26 pounds in weight. General health better than ever before.
Bacteriological examination negative. X-ray kidneys negative. Albumin: Large amount. Casts: Granular and R. B. C.; few W. B. C. Blood: Large sediment in each voiding. (No functional test.)	Dec., 1912. Chronic tonsillitis. Chronic ethmoiditis. Multiple arthritis. Hematuria. (Nasal operation also.)	None.	Dec., 1912. Within a few days after the tonsillectomy there was an acute flare-up of the arthritis, but at the same time an improvement in the urinary condition. Dec., 1913. Joints steadily improved after this last acute attack in Dec., 1912; have been normal in every way for the past 8 or 9 months. General health good. Blood pressure 120 mm. Hg. Urine: Slight trace albumin; a few hyaline casts; 7 to 10 red blood cells in microscopic field of centrifuge spec., while 1 year ago there were 400 or more in a field of a plain specimen. Mar., 1916. In perfect health. Joints normal. Urine normal in every way.
Examination genito-urinary tract negative. X-ray kidneys: Negative. Albumin: Large amount. Casts: R. B. C. and W. B. C.; hyaline and finely granular. Phthalein excretion: 64%.	April, 1913. Chronic tonsillitis. Infected adenoids. Cervical adenitis. Nephritis.	None.	May, 1913 (1 month after operation). Albumin 1 gm. to liter; number casts less. General condition excellent. July, 1914. Trace of albumin; but very few casts, R. B. C. or W. B. C. now found in centrif. specimen. Nasopharynx and throat look normal. Oct., 1915. Still trace albumin. All casts, blood and pus disappeared in May, 1915. Blood pressure 130 mm. Hg. Works on farm regularly for past 2 years.

TABLE VII.—RENAL GROUP. REMOVAL OF TONSILS AND ADENOIDS FOR NEPHRITIS

Name. Surg. No. Sex.	Race.	Age.	Occupation.	History.	Heart Lesion. Arthritis.	General Physical Examination.	Special Examination. Nose, Throat, Ears and Sinuses.
E. McC. 33944. Med. Female.	W	21	School.	Occasional sore throat, especially in A. M. No acute tonsillitis for several years. Easily tired; loss appetite; frequent nausea. No headache. No history scarlet fever.	None.	No general glandular enlargement. Gastric analysis: Free Hcl. 20%; total acidity 50%. Heart and lungs: Normal. Ptosis abdominal organs. W. B. C.: 7600. Hb.: 70%.	Tonsils: Embedded; small; densely adherent. (Have been partially removed.) Adenoids: Small amount. Teeth: Wisdom infected on right (X-ray). Ears: Normal. Cervical glands: Enlarged, tender at angles jaw; especially on right. Sinuses: Not infected.
A. P. 34434. Female.	W	36	Housewife.	Frequent tonsillitis every winter since childhood. Headache, impaired hearing and tinnitus for past year. Nycturia for past year. No scarlet fever.	Mitral insufficiency.	Heart: Enlarged; mitral insufficiency. General arteriosclerosis. Blood pressure: 220 systolic; 140 diastolic.	Tonsils: Enlarged; adherent. Adenoids: Enlarged. Teeth: Pyorrhea; caries. Cervical glands: Evident on inspection at angles jaw.
A. McL. 34690. Male.	W	30	Minister.	Frequent tonsillitis. Has had five attempts to remove tonsils. Constant discharge in throat. Albumin and blood in urine discovered 5 years ago during examination for life insurance. Headache frequent. Vision good. No history scarlet fever.	None.	No general glandular enlargement. Heart and lungs: Normal. Temperature at present 99.8° F. Liver and spleen: Not palpable. Wassermann: Negative. Genito-urinary examination: Negative.	Tonsils: Embedded; fibrous; densely adherent to pillars. Adenoids: Enlarged; chronically infected; discharge in nasopharynx. Nose: Hypert. inf. turb.; sinuses all clear. Ears: Chronic catarrhal otitis media. Cervical glands: Much enlarged at angle jaws; tender; slightly enlarged at posterior triangles. Teeth: Abscess upper bicuspid on right.
S. S. 35372. Male.	W	21	Laborer.	History one severe attack tonsillitis 5 years ago; was in bed 2 or 3 weeks. No sore throat since. Referred from medical department where he has been treated for acute nephritis. Has headache, pain in back and abdomen, vomiting, generalized edema.	None.	No general glandular enlargement. Heart: Slightly enlarged; no organic lesion. No special thickening of vessel walls. Lungs: Clear on perc. and ausc. Blood pressure 150 mm. Hg. R. B. C.: 5,008,000. W. B. C.: 10,000. Hb.: 85%. Temperature 100° F.	Tonsils: Small; imbedded; densely adherent to pillars. Adenoids: Small; infected. Nose: Hypert. inf. turbinates; no discharge; X-ray shows clouding left antrum; no pus on irrigation. Teeth: Pyorrhœa; caries. Ears: Chronic catarrhal otitis media. Cervical glands: Enlarged; tender at angles jaw; especially left.
H. M. R. 32274. Male.	W	29	Physician.	Chorea when a child. Frequent tonsillitis. Tonsils were partially removed on two occasions. Severe tonsillitis 1 year ago, another attack 1 month before present illness. This latter attack was due to streptococcus. After acute symptoms subsided had headache, general malaise, loss appetite. After 3 weeks friend noticed swelling face. Urine then found to contain large amount albumin, casts and blood. About same time joints became swollen and painful.	No heart lesion. Multiple arthritis.	General Glandular enlargement. General edema. Joints swollen, painful; not red. Heart: Normal. Lungs: Normal. Wassermann: Negative.	Tonsils: Enlarged; densely adherent to pillars. Adenoids: Small amount. Teeth: Poor, caries and pyorrhœa. Nose: No sinus infection. Ears: Normal. Cervical glands: Barely palpable though quite tender. (Patient quite fat.)
G. B. 37901. Female.	W	26	Nurse.	Frequent tonsillitis and quinsy. Tonsillitis 2 months ago very severe; followed by multiple arthritis and acute nephritis. The edema has all cleared up, but albumin, casts and dimin. output continue.	No heart lesion. Multiple arthritis.	Slight general glandular enlargement. Heart: Normal. Lungs: Normal. Joints: Still stiff and painful after exercise.	Tonsils: Slightly enlarged; densely adherent to pillars. Right larger than left (due to quinsy?). Adenoids: Small amount. Teeth: Good. Ears: Not infected. Nose: Sinuses clear. Cervical glands: Enlarged and tender.
C. W. 31435. Male.	W	16	Laborer.	History frequent tonsillitis since early childhood. Acute rheumatic fever in Dec., 1912. Ankles and knees still stiff and painful. Also had hematuria for first time in Dec., 1912. Is just recovering from a second attack of rheumatic fever.	Mitral insufficiency.	Slight general glandular enlargement. Lungs: Clear. Heart: Enlarged; mitral insufficiency. Spleen: Palpable; enlarged. R. B. C.: 4, 500,000. W. B. C.: 9500. Hb.: 80%.	Tonsils: Enlarged; adherent. Adenoids: Enlarged. Teeth: Caries. Nose: Sinuses clear. Cervical glands: Visibly enlarged at angles of jaw.

TABLE VIII.—SUMMARY OF 142 CASES IN WHICH THE TONSILS AND ADENOIDS WERE REMOVED ON ACCOUNT OF ENLARGED

I. CASES BETWEEN 1 AND 5 YEARS OF AGE.

Name. Surg. No. Sex.	Race.	Age.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
R. B. 29823. Female.	W	4	Frequent sore throat, chills and fever for 1 year. Mouth-breather. Difficulty in swallowing.	Enlarged at angle jaw and in posterior triangles. Both submaxillaries enlarged.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Excellent.	Normal. W. B. C.: 8400. Hb.: 74%. Temperature: 99.4° F.
E. M. 31007. Female.	W	5	Mouth-breather; frequent colds. Recently two severe atttacks tonsillitis.	Enlarged in anterior triangles.	Adenoids: Large mass. Tonsils: No note on size.	Normal. Temperature: 98.6° F.
M. E. 31209. Male.	W	3	Swelling glands neck. Mouth-breather. Frequent colds.	Size hickory-nuts at angle jaw on each side.	Tonsils: Slightly enlarged. Adenoids: Very large. Teeth: Good.	Normal. Temperature: 98.6° F.
M. H. 31450. Female.	W	3	Frequent sore throat; fever, swelling glands neck; speech thick.	Glands at angles jaw evident on inspection; hard, movable.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Good.	Normal. W. B. C.: 8400. Temperature: 99° F.
H. C. 31590. Female.	C	5	Swelling glands neck; frequent sore throat; mouth-breather.	Very large; hard; movable in both anterior triangles.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Good.	Normal. W. B. C.: 9900. Hb.: 75%. Temperature: 99° F.
M. G. 31663. Male.	W	5	Frequent attacks tonsillitis.	Enlarged at angles jaw and slightly in posterior triangles.	Tonsils: About normal size. Adenoids: Large mass. Teeth: No note.	Normal. Temperature: 99.6 ° F.
J. L. 31864. Male.	W	3	Mouth-breather; fretful; poor appetite.	Very large at angles jaw, suggest tbc. glands.	Tonsils: Very large. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 99° F.
L. R. 32006. Female.	W	2	Swelling glands angles jaw; impairment hearing; difficulty in swallowing.	Size hickory-nuts on both sides at angle jaw.	Tonsils: Meet in mid-line. Adenoids: Very large. Ears: Slight discharge both sides. Teeth: Good.	Normal. W. B. C.: 11,000. Hb.: 75%. Temperature: 99° F.

WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

Urinary Examination.	Date and Indication for Operation. Tonsillectomy.	Post-operative Complications.	Subsequent Examination.
Albumin: Trace. Casts: Many hyaline, finely granular, and leucocyte. Few red blood cells.	April, 1915. Chronic tonsillitis. Cervical adenitis. Nephritis. (Extraction wisdom tooth right.)	None.	Dec., 1915 (8 months after operation). Urine examination normal on two different days. No albumin; no casts; no blood. Has gained 40 pounds in weight. No longer any nausea; appetite good. General health better than ever before.
Sp. gr. 1018; acid. Albumin: 1 gm. to liter. Sugar: 0. Casts: Granular.	April, 1914. History frequent tonsillitis. Chronic nephritis. Arteriosclerosis.	None.	April, 1916. Died pneumonia. During past 2 years was admitted to hospital on three occasions for nephritis. The tonsillectomy was of no apparent benefit. Autopsy showed chronic diffuse nephritis; general arteriosclerosis; cardiac hypertrophy; albuminuric retinitis; and cerebral hemorrhage right.
Albumin: Heavy trace. Blood: Large sediment with each voiding. Casts: Few hyaline and finely granular.	June, 1914. Chronic tonsillitis. Infected adenoids. Nephritis. (Referred to dentist.)	None.	Dec., 1914. No blood, pus or casts in urine; trace albumin. Gained 10 pounds in weight. Oct., 1915. Has had five examinations of urine since last report, all normal with one exception. After returning from a strenuous hunting trip a trace of albumin was found, but no blood or casts. General health excellent. No headaches. Appetite good.
Albumin: Large amount. Casts: Blood, leucocyte, granular in large numbers. Large sediment blood in each voiding. Phthalein: June, 1914, 25%; Sept., 1914, 64%. (At time of operation edema had cleared up and urine contained less blood and albumin than above report.)	Sept., 1914. Chronic tonsillitis. Infected adenoids. Nephritis. (Referred to dentist.)	None.	Sept., 1915. Urine: Sp. gr. 1020; no albumin (nitric acid or heat and acetic); no sugar; no casts of any kind after centrifugalizing. Blood pressure 125 mm. Hg. Heart: 12 cm. to left; 3½ cm. to right; no murmurs. Lungs clear. General condition excellent. Works regularly. Glands at angle jaws not palpable; a few small glands in posterior triangles. Teeth: Still in bad condition (again referred dental department). Nose: Looks normal. Aug., 1916. Urine: Clear; acid; 1010; albumin 0; sugar 0; no casts or R. B. C. found. Subjectively perfectly well; works regularly.
Albumin: 5 grams to liter. Casts: Blood, leucocyte, granular. Phthalein: 44% in 2 hours.	June, 1913. Chronic tonsillitis. Acute nephritis. Acute arthritis following attack tonsillitis. (Referred to dentist.)	None.	Nov., 1914. Urine completely cleared up within 6 months after operation. Joints all normal. General health excellent. April, 1916. Urine normal in every way. Joints normal.
Albumin: Heavy trace. Casts: Hyaline; granular. Few R. B. C.; much less than a month ago.	Sept., 1915. Chronic tonsillitis. Nephritis. Polyarthritis.	Temporary increase in albumin, casts and joint symptoms.	June, 1916. Urine normal in every way. Joints normal. General health excellent. Sept., 1916. Urine normal in every way. Joints normal.
Albumin: Heavy trace. Casts: Granular, hyaline, blood and leucocyte. Blood: Large sediment.	Feb., 1913. Chronic tonsillitis. Acute rheumatic fever. Endocarditis. Nephritis.	None.	Aug., 1916. Urine: Acid, sp. gr. 1007; albumin 0; sugar 0; one granular cast found. Subjectively is perfectly well. Working regularly for past two years. Joints normal. Has had no recurrence of rheumatic fever. Heart: Definite mitral insufficiency.

CERVICAL GLANDS, WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.

I. CASES BETWEEN 1 AND 5 YEARS OF AGE.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination.			
		General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
May, 1912. Chronic tonsillitis. Cervical adenitis. Mouth-breather.	None.	Aug., 1915. Excellent.	One gland angle jaw palpable on right; about ½ cm. diameter. Shot-like glands posterior triangles.	Teeth: Carious molar right. Throat, nose, ears: Normal.	Well.
Nov., 1912. Chronic tonsillitis. Cervical adenitis. Mouth-breather.	None.	May, 1913. Still mouth-breather. Fewer colds. June, 1915. Is perfectly well.	At angle jaw on right enlarged; on left not palpable. Gland on right still enlarged. Submaxillary glands not palpable.	Teeth: Good. Throat, nose, ears: Normal.	One small gland on right still palpable.
Jan., 1913. Enlarged cervical glands. Mouth-breather.	None.	July, 1915. Grown rapidly. Has frequent colds. Pain in left ear at times; no discharge.	At angle jaw on each side ½ cm. diameter. Small in posterior triangles.	Teeth: Carious. Nose and throat: Normal. Ears: Chronic catarrhal otitis media.	Glands almost disappeared.
Feb., 1913. Cervical adenitis. Speech impaired. Mouth-breather.	None.	May, 1913. Much improved. April, 1914. Perfectly well. Sept., 1915. Perfectly well.	Gland on left just palpable. Gland on left just palpable. Just palpable in anterior and posterior.	Throat: Looks normal. Hypert. nodules lymphoid tissue on pharynx wall. Teeth: Good.	Well.
Feb., 1913. Cervical adenitis. Mouth-breather.	None.	Aug., 1915. No colds or other illness since operation.	Glands not palpable in anterior triangles on either side.	Throat: Hypert. lymphoid tissue on pharynx wall. Teeth: Alveolar abscess upper bicuspid left.	Well. Glands not palpable, although alveolar abscess. Still present.
Mar., 1913. Chronic tonsillitis. Cervical adenitis.	None.	April, 1914. Much improved. No colds. Grown rapidly.	Glands just palpable at angle jaws and in posterior triangles.	Throat, nose, ears: Normal.	Well.
April, 1913. Cervical adenitis. Mouth-breather.	None.	April, 1914. No gain in weight. Appetite poor. Mouth-breather. No colds since operation. Aug., 1915. Much improved in last year. Mouth closed.	At angle jaw on right one gland about 1 cm. diameter; smaller on left. Glands size small shot in anterior and posterior triangles.	Teeth: Four carious. Ears: Normal. Teeth: Still carious. Lymphoid hyperplasia pharynx.	Well.
April, 1913. Cervical adenitis. Chronic otitis media.	None.	Aug., 1915. Excellent since operation. Ears normal. Has grown rapidly.	Still slightly enlarged angle jaw left. Not palpable on right.	Teeth: Good. Throat: Normal looking. Ears: Normal looking.	Well.

TABLE VIII.—SUMMARY OF 142 CASES IN WHICH THE TONSILS AND ADENOIDS WERE REMOVED ON ACCOUNT OF ENLARGED

I. CASES BETWEEN 1 AND 5 YEARS OF AGE.—Continued.

Name. Surg. No. Sex.	Race.	Age.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
F. B. 32389. Male.	W	4	Swelling glands neck; frequent sore throat; mouth-breather; difficulty in swallowing.	Enlarged at angles of jaw and in posterior triangles.	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 99° F.
W. G. 32492. Male.	W	5	Frontal headache; frequent colds; mouth-breather.	Evident on inspection at angle jaws; hard; movable.	Tonsils: Much enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 98.2° F.
C. M. 33142. Male.	W	4	Frequent sore throat with fever; swelling glands neck noticed for 3 months.	Large mass hard, movable glands at angle jaw on each side.	Tonsils: Much enlarged. Adenoids: Large amount. Teeth: Carious.	Normal. No general glandular enlargement. W. B. C.: 14,500. Hb.: 95%. Temperature: 98° F.
E. C. 33217. Male.	W	2	Swelling glands neck noticed for 9 months; frequent colds; frequent earache; mouth-breather. Poor appetite; fretful.	Evident on inspection at angle jaws; hard; movable.	Tonsils: Enlarged; nodular. Adenoids: Large mass. Ears: Chronic discharge on left. Teeth: Good.	Normal. No general glandular enlargement. Temperature: 99° F.
M. F. 33309. Female.	W	5	Frequent sore throat; mouth-breather.	Slightly enlarged at angle jaws and in posterior triangles.	Tonsils: Enlarged. Adenoids: Enlarged; mouth-breather. Teeth: Carious.	Normal. W. B. C.: 12,800. Hb.: 85%. Temperature: 99° F.
A. W. 33436. Male.	C	5	Chronic cough; loss weight; poor appetite; chronic cold in head. "Suspicious pulmonary Tbc." (Medical department.)	Much enlarged; hard; movable at angle jaws.	Tonsils: Slightly enlarged; adherent. Adenoids: Large mass. Teeth: Good. Ears: Normal.	Impairment l. apex; râles over both lungs. W. B. C.: 15,200. Hb.: 60%. General glandular enlargement. Temperature: 99° F.
J. L. 33551. Male.	W	5	Frequent sore throat; enlarged cervical glands. Had diagnosis of Tbc. when 18 months of age. Uncle recently died Tbc. in same house.	Evident on inspection at angle jaws; hard; movable.	Tonsils: Much enlarged. Adenoids: Large; adenoid facies. Teeth: Carious.	Lungs and heart: Normal. Slight general glandular enlargement. Temperature: 98.6° F. Pirquet positive Oct., 1909.
V. B. 33669. Female.	W	3	Mouth-breather.	Slightly enlarged and hard at angle each jaw.	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Carious.	Normal. W. B. C.: 7200. Temperature: 99° F.
H. W. 34491. Male.	C	2½	Chronic cough; difficulty in swallowing; swelling glands right side neck for one year.	Large mass glands at angle jaw right, and in posterior triangle right. Hard; adherent; fixed.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Good.	Lungs: Normal. Spleen: Not palpable. Heart: Normal. Temperature: 98.6° F.
K. P. 34572. Male.	W	4	Frequent sore throat; severe attack 1 month ago. Mouth-breathing. Loss appetite.	Slightly enlarged at angle jaws; discrete; hard.	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Good.	Normal. W. B. C.: 11,500. Hb.: 70%. Temperature: 99.4° F.
E. L. 34614. Male.	W	5	Cold in head; frequent sore throat; mouth-breather.	Enlarged at angle jaws and in posterior triangles; discrete; hard.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98.6° F.
L. S. 34810. Male.	W	2	Fretful; cough; frequent colds; mouth-breather.	Enlarged at angle jaws; hard.	Tonsils: Enlarged, especially left. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 98.6° F. No general glandular enlargement.
V. H. 35042. Female.	W	4	Frequent sore throats; earache; mouth-breathing.	Markedly enlarged at angle jaws on both sides.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Carious. Ears: chronic otitis media supp.	Normal. Temperature: 99° F. No general glandular enlargement.
C. K. 35095. Male.	W	2½	Frequent earache with discharge; mouth-breather. Swelling glands neck for 6 months.	Large masses glands at angle jaw on each side; very evident on inspection; soft; not adherent.	Tonsils: Small; adherent to pillars. Adenoids: Large mass. Teeth: Good. Ears: Chronic otitis media.	Normal. R. Temperature: 99.6° F. No general glandular enlargement. Von Pirquet: Not positive.
H. D. 35901. Male.	W	2	Chronic cough 6 months; mouth-breather; sore throats; poor appetite; fretful.	Moderately enlarged at angle jaw on both sides.	Tonsils: Enlarged. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 99° F. W. B. C.: 13,600. No general glandular enlargement.
L. H. 35949. Female.	W	5	Frequent colds; discharge left ear; mouth-breather.	Enlarged. (Pediculosis capitis.)	Tonsils: Enlarged. Teeth: Carious. Adenoids: Large mass.	Normal. Temperature: 98.5° F. No general glandular enlargement.
E. L. 36094. Male.	W	2	No history sore throats. Enlarged glands neck; mouth-breather. On right glands began to enlarge when child was 2 months of age.	Much enlarged glands angle jaws; very evident on inspection; very suggestive of Tbc. glands.	Tonsils: Meet in mid-line. Adenoids: Very large mass. Teeth: Good.	Normal. Temperature: 98.6° F.
A. W. 36638. Male.	W	5	Enlarged gland angle jaw left for 6 weeks. Mouth-breather; frequent colds.	Measures 3 x 5 cm. angle jaw left; hard; not adherent (diagnosed in Surg. Disp. Tbc. gland.)	Tonsils: Enlarged. Adenoids: Large amount. Teeth: Carious.	X-ray chest normal. Von Pirquet: Negative. R. B. C.: 4,400,000. W. B. C.: 14,000. Hb.: 90%. No general glandular enlargement.
K. M. 36684. Female.	C	3	Swelling glands neck; difficulty in breathing; discharge from ears; peritonsillar abscess 3 weeks ago.	Enlarged at angle jaw both sides; very evident on inspection. (Noticed for 1 year.)	Tonsils: Enlarged. Teeth: Carious. Adenoids: Large mass. Ears: Drums retracted.	Temperature: 98° F. Normal. Temperature: 98.5° F. General glandular enlargement. Pirquet test: Negative.
A. R. 37153. Female.	C	4	Frequent colds and sore throat; swelling glands neck; nasal discharge; mouth breather.	Gland angle left jaw 2 x 2 cm.; hard; movable; enlarged in other triangles.	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 99° F. General glandular enlargement.
M. J. 37311. Female.	W	3	Suppurated gland right angle jaw 1 month; discharging; frequent colds; vomiting, fever.	Discharging mass glands angle jaw on right; also enlarged down sternomastoid on right; slightly on left. (Very suggestive Tbc. glands.)	Tonsils: Slightly enlarged; adherent to pillars. Adenoids: Infected; discharge. Teeth: Good.	Normal. Pirquet test: Negative. No general glandular enlargement.
T. H. 37326. Male.	W	4	Chronic cough 6 months; mouth-breather; frequent colds.	Enlarged at angle jaws; slightly enlarged posterior triangles.	Tonsils: Enlarged; adherent. Adenoids: Large mass. Nose: Deflected septum right. Malocclusion.	Normal. Temperature: 99° F. No general glandular enlargement. Pirquet test: Negative.
A. N. 37837. Female.	W	4	Chronic cough; mouth-breather; frequent colds; tonsillitis 4 months ago. Appetite poor.	Enlarged at angle jaws and slightly in posterior triangles.	Tonsils: Very large. Adenoids: Very large. Teeth: Good.	Normal. Temperature: 99.5° F. Pirquet: Negative.

CERVICAL GLANDS, WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

I. CASES BETWEEN 1 AND 5 YEARS OF AGE.—Continued.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination.			
		General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
June, 1913. Cervical adenitis. Mouth-breather.	None.	Sept., 1915. Frequent colds and epistaxis; otherwise perfectly well.	Not palpable in anterior triangle on either side; small in posterior triangles.	Teeth: Good. Throat: Lymphoid hyperplasia in pharynx; otherwise normal. Nose and ears look normal.	Well.
July, 1913. Cervical adenitis. Mouth-breather.	None.	July, 1915. Perfect health; no headaches since operation. Has grown rapidly.	Two or three glands angle jaw right measure ½ cm. diameter; not palpable in anterior triangle left.	Teeth: Good. Throat: Looks normal. Ears: Normal.	Well: Palpable glands remain at angle jaw on right after 2 years.
Oct., 1913. Cervical adenitis (Tbc.?). Mouth-breather.	None.	Sept., 1915. Perfect health; not sick in past 2 years.	On right at angle jaw hard, discrete gland 2 x 1 cm. Not palpable on left.	Teeth: Carious. Throat: Looks normal. Nose and ears: Normal.	Apparently well, although still enlarged gland at angle jaw on right.
Nov., 1913. Cervical adenitis (Tbc.?). Mouth-breather.	None.	Oct., 1915. Is healthy, strong, well grown. No trouble with ears. Breathes normally.	At angle jaw on right about 2 x 1 cm.; hard; movable. Just palpable on left and in posterior triangles.	Teeth: Good. Throat: Looks normal. Nose and ears: Normal.	Apparently well, although still enlarged gland at angle jaw on right.
Nov., 1913. Chronic tonsillitis. Mouth-breather.	None.	Feb., 1916. Just recovered from scarlet fever; general health excellent.	Barely palpable on left; not palpable on right.	Throat: Normal. Nose and ears: Normal.	Well.
Dec., 1913. Cervical adenitis. Chronic bronchitis (?). Mouth-breather.	None.	Feb., 1916. Excellent. No cough; normal weight. Lungs clear on perc. and ausc.	Barely palpable in anterior and posterior triangle on right. Not felt left.	Teeth: Carious, especially right. Throat: Lymphoid hyperplasia; otherwise normal.	Well.
Dec., 1913. Chronic tonsillitis. Cervical adenitis. Mouth-breather.	None.	June, 1915. General health good; only two or three colds in past 2 years.	Not palpable in anterior triangle either side. Just felt on left in posterior triangle.	Teeth: Carious. Throat: Lymphoid hyperplasia; otherwise normal. Ears and nose: Normal.	Well.
Jan., 1914. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Excellent; grown rapidly; good appetite; breathes normally.	Barely palpable in anterior and posterior triangles.	Teeth: Carious. Throat: Normal. Nose and ears: Normal.	Well.
May, 1914. Cervical adenitis (Tbc.)? Mouth-breather.	None.	Mar., 1916. Excellent; not sick since operation.	Barely palpable on right; not felt on left.	Throat: Lymphoid hyperplasia; otherwise normal. Teeth: Carious. Nose and ears: Normal.	Well.
May, 1914. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Perfectly well since operation. Well grown healthy looking child.	Not palpable in anterior triangles on either side; just felt in posterior triangles.	Teeth: Good. Throat: Lymphoid hyperplasia; otherwise normal. Nose and ears: Normal.	Well.
May, 1914. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Has had no colds or other illness since operation. Still sleeps with mouth open.	Are not palpable in anterior or posterior triangles.	Teeth: Carious upper right; lower left. Throat: Looks normal. Nose and ears: Normal.	Well. Cervical glands not palpable, although teeth are still carious.
June, 1914. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Still has spasmodic choking cough only at night; otherwise good health.	Barely palpable at angle jaws. About size bean in submaxillary triangle on right.	Teeth: Good. Throat: Looks normal with exception lymphoid hyperplasia. Larynx: Normal.	Very slight impairment lower left back; no rales. Von Pirquet: Negative. Abdomen: Normal.
July, 1914. Chronic tonsillitis. Chronic otitis media. Mouth-breather.	None.	June, 1915. No sore throat or trouble with ears since operation. Still sleeps with mouth open. Otherwise in excellent health.	Slightly enlarged submaxillary glands on both sides. Glands at angle jaw not palpable; just palpable in posterior triangles.	Teeth: Carious; abscess lower left. Throat: Lymphoid hyperplasia on pharynx. Ears: Drums retracted but normal. Nose: Normal.	Well. Referred to dental department.
Aug., 1914. Cervical adenitis. Mouth-breather. Otitis media.	None.	June, 1915. General health good; no trouble with ears. Breathing normal.	Barely palpable, discrete glands at angles jaw.	Teeth: Good. Throat: Lymphoid hyperplasia. Nose and ears: Look normal.	Well.
Dec., 1914. Chronic tonsillitis. Mouth-breather. Chronic cough.	None.	Nov., 1915. No colds; cough; breathes normally; has grown rapidly.	Just palpable on right; not felt on left.	Throat: Lymphoid hyperplasia; otherwise normal. Teeth: Good. Nose and ears: Normal.	Well.
Dec., 1914. Chronic tonsillitis. Mouth-breather. Otitis media.	None.	Nov., 1915. "Perfectly well in every way."	Not palpable on left; just felt on right.	Teeth: Carious. Nose and ears: Normal. Throat: Lymphoid hyperplasia.	Well.
Jan., 1915. Cervical adenitis (Tbc.)? Mouth-breather.	None.	Aug., 1915. Much improved; eats well; sleeps well.	Just palpable on left; measure about 1 x 1 cm. on right.	Teeth: Good. Throat: Looks normal.	Well.
May, 1915. Cervical adenitis. Mouth-breather.	None.	Nov., 1915. Much improved; no cold since operation. Still sleeps with mouth open.	Gland at angle left jaw about ½ cm. in diameter; just palpable on right.	Teeth: Carious lower left. Throat: Looks normal. Ears: Drums retracted.	Well. Gland disappeared, although carious tooth remains.
April, 1915. Cervical adenitis. Chronic tonsillitis.	None.	Nov., 1915. Much improved. Hearing almost normal. Breathing normal.	Glands not palpable in anterior triangle; just felt posterior triangle.	Teeth: Carious lower right and left. Throat: Looks normal. Ears: Drums slightly retracted.	Well. Gland disappeared, although carious tooth remains.
June, 1915. Cervical adenitis. Mouth-breather.	None.	Nov., 1915. No colds since operation. Breathes normally.	Glands barely palpable on left; not palpable right in anterior triangle. Small, shot-like in posterior triangle.	Teeth: Good. Throat: Looks normal. Nose and ears: Normal.	Well.
June, 1915. Cervical adenitis (Tbc.)? Chronic tonsillitis. (Local curettage infected gland on right.)	None.	Nov., 1915. Much improved. One vomiting attack since operation. No colds.	Scar right; glands at angle jaw and in anterior triangle just palpable on both sides; not palpable in posterior triangles.	Teeth: Good. Throat: Lymphoid hyperplasia. Nose and ears: Normal.	Well.
June, 1915. Chronic tonsillitis. Mouth-breather.	None.	Nov., 1915. No cough since operation. Breathes normally through nose.	Barely palpable in anterior and posterior triangles.	Throat: Lymphoid hyperplasia on pharynx.	Well.
Sept., 1915. Chronic tonsillitis. Mouth-breather.	None.	Feb., 1916. No cough since operation, but frequent colds. Appetite good.	Barely palpable in anterior and posterior triangles.	Teeth: Good. Throat: Lymphoid hyperplasia. Ears: Normal.	Well.

TABLE VIII.—SUMMARY OF 142 CASES IN WHICH THE TONSILS AND ADENOIDS WERE REMOVED ON ACCOUNT OF ENLARGED

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.

Name. Surg. No. Sex.	Race.	Age.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
M. D. 29215. Female.	W	8	Frequent sore throat. Impaired speech; mouth-breather; adenoid facies.	Enlarged at angle jaw; also submaxillary glands.	Tonsils: Meet in mid-line. Adenoids: Large mass. Teeth: Good.	Normal. W. B. C.: 12,200. Hb.: 75%. Temperature: 98.5° F.
B. K. 29783. Female.	W	7	Frequent tonsillitis with fever and swelling glands neck; epistaxis; headache; pale; poor appetite.	Enlarged at angles jaw.	Tonsils: Very large. Adenoids: Very large. Teeth: Good.	General glandular enlargement. Poorly nourished; pale. W. B. C.: 11,200. Hb.: 70%. Temperature: 99° F.
L. E. 30916. Female.	W	6	Swelling glands neck; mouth-breather; occasional tonsillitis; cough.	About size hickory-nuts at each angle jaw; hard.	Tonsils: Almost meet. Adenoids: Very large. Teeth: Carious.	Bronchial rales. Temperature: 98° F. Otherwise normal.
C. D. 31083. Female.	W	9	Frequent sore throat; mouth-breather.	Enlarged in anterior and posterior triangles.	Tonsils: Enlarged. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 98° F.
C. K. 31136. Male.	W	10	Swelling glands left side neck; mouth-breather; frequent colds.	Mass glands angle jaw left size egg; hard; adherent.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Good.	Lungs normal. Temperature: 98.5° F.
A. L. 31219. Female.	W	9	Frequent colds; mouth-breather.	Enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 98.6° F.
F. L. 31220. Female.	W	10	No history sore throat; chronic cold; mouth-breather.	Enlarged especially left (Pediculosis capitis).	Tonsils: Enlarged, especially right. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98.6° F.
E. W. 31607. Female.	C	8	Frequent colds and sore throat; mouth-breather.	Enlarged anterior and posterior triangles.	Tonsils: Enlarged. Adenoids: Enlarged. Ears: Chronic catarrhal otitis media left.	Normal. Temperature: 98.2° F.
J. E. 31632. Female.	W	9	Sore throat frequent for 2 or 3 years; mouth-breather.	Enlarged angle jaws, especially left.	Tonsils: Left larger than right. Adenoids: Large. Teeth: Carious.	Normal. Temperature: 98° F.
T. H. 31789. Male.	W	8	Frequent tonsillitis; constant nasal cold; mouth-breather; enlarged glands.	Enlarged angles jaw both sides.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Good.	Normal. Temperature: 98.6° F.
L. H. 31828. Male.	W	7	No history sore throat; enlarged cervical glands; mouth-breather.	Much enlarged angles jaw.	Tonsils: Much enlarged. Adenoids: Mouth-breather; large. Teeth: Carious.	Normal. Temperature: 98° F.
V. W. 31845. Female.	W	7	Frequent sore throat past 3 years; mouth-breather.	Enlarged on right at angle jaw; just palpable on left.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. W. B. C.: 4800. Hb.: 80%. Temperature: 99° F.
E. B. 31866. Female.	W	8	Frequent tonsillitis for 3 years; mouth-breather; pains knees; earache.	Slightly enlarged angles jaw.	Tonsils: Meet in mid-line. Adenoids: Large mass. Teeth: Carious.	Normal. W. B. C.: 7000. Hb.: 88%. Temperature: 99° F.
A. L. 31968. Male.	W	6	Chronic cough; anæmic; enlarged cervical glands; hoarseness; always delicate physically, and mentally retarded; mouth-breather.	Size walnut at angles jaw; matted together (Tbc.?).	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Good. Vocal cords: Red; otherwise normal.	Diag. pulmonary Tbc. in Phipps Dispensary. Temperature: 99° F.
M. M. 32025. Female.	W	10	Frequent sore throat; mouth-breather; chronic cough.	Enlarged.	Tonsils: Meeting in mid-line. Adenoids: Large mass. Teeth: Carious.	Poorly nourished; otherwise negative. Temperature: 99° F.
M. Z. 32073. Female.	W	10	Frequent sore throat; mouth-breather; chronic cough.	Enlarged in all triangles.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Systolic murmur apex; not transmitted. Otherwise normal. Temperature: 98.6° F.
A. H. 32144. Female.	W	10	Swelling glands neck; frequent sore throat; mouth-breather.	Size walnuts angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 98.6° F.
J. P. 32238. Male.	W	7	Swelling glands neck; frequent sore throat; impaired hearing; epilepsy.	Enlarged angles jaw.	Tonsils: Small; embedded. Adenoids: Small amount. Teeth: Carious; malocclusion. Ears: Chronic catarrhal otitis media.	Normal. Temperature: 98.4° F.
A. S. 32362. Male.	W	6	Mouth-breather.	Size walnut angle jaw left; enlarged in other triangles.	Tonsils: Not enlarged; adherent to pillars. Adenoids: Large. Teeth: Good.	Normal. Temperature: 98.6° F.
N. D. 32381. Female.	W	6	Swelling glands neck; mouth-breather; frequent colds.	Evident on inspection angles jaw both sides.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Good.	Normal. Temperature: 98.8° F.
W. E. 32435. Male.	W	7	Sore throat; mouth-breather; earache.	Enlarged angles jaw.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Good.	Normal. Temperature: 99° F.
G. S. 32666. Female.	W	6	Sore throat; earache; mouth-breather.	Much enlarged on right.	Tonsils: Much enlarged. Adeniods: Much enlarged. Teeth: Carious.	Normal. Temperature: 98.8° F.
M. C. 32752. Female.	W	8	Swelling glands neck; frequent sore throat; mouth-breather.	Evident on inspection angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99° F.
E. S. 32832. Female.	W	8	Sore throat; earache; mouth-breather.	Much enlarged on left.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 99° F.
L. L. 32835. Female.	W	10	Swelling glands neck; headaches; mouth-breather.	Evident on inspection on both sides at angle jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: No note.	Normal. Temperature: 98.4° F.
J. M. 32724. Female.	W	8	Sent by school inspector; mouth-breather.	Much enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99.5° F.
R. S. 32780. Female.	W	7	Frequent sore throat; mouth-breather.	Slightly enlarged at angles jaw.	Tonsils: Not enlarged. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 98.6° F.
B. S. 32872. Male.	W	8	Swelling glands neck; frequent sore throat; mouth-breather.	Size almonds at angle jaw on each side.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98.6° F.
W. C. 32892. Male.	W	7	Swelling glands neck; frequent tonsillitis; headache.	Size walnuts each side at angle jaw.	Tonsils: Small; imbedded. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 98° F.
J. C. 32891. Male.	W	9	Swelling glands neck; frequent sore throat.	Size walnuts each side at angle jaw.	Tonsils: Small; adherent to pillars. Adenoids: Small; infected. Teeth: No note.	Normal. Temperature: 98° F.

CERVICAL GLANDS, WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination.			
		General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
Feb., 1912. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Good; few colds; speech normal.	Just palpable.	Teeth: Good. Throat: Looks normal.	Well.
May, 1912. Chronic tonsillitis. Mouth-breather.	None.	Aug., 1915. Perfectly well since operation.	About ½ cm. in diameter at angles jaw; others small.	Teeth: Good. Throat: Looks normal.	Well.
Nov., 1912. Chronic tonsillitis. Cervical adenitis.	None.	June, 1915. No sore throat since operation. No headaches.	At angle jaw on right glands about 1 x 1 cm.; discrete; hard. Slightly enlarged in other triangles.	Teeth: Carious. Throat: Lymphoid hyperplasia. Nose and ears: Normal.	Well, although cervical glands still slightly enlarged.
Dec., 1912. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Only one cold since operation.	About size shot in the anterior and posterior triangles.	Teeth: One carious. Throat: Looks normal. Nose and ears: Look normal.	Well.
Dec., 1912. Cervical adenitis. Mouth-breather.	None.	Nov., 1915. Perfectly well; breathes normally.	Not palpable in anterior or posterior triangle either side.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Dec., 1912. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Perfectly well; breathes normally.	Not palpable in anterior triangles; just palpable posterior triangle.	Teeth: Good. Throat: Looks normal.	Well.
Dec., 1912. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Only one cold since operation.	Barely palpable in anterior and posterior triangles.	Teeth: Carious. Throat: Looks normal.	Well.
Feb., 1913. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Perfectly well.	Still slightly enlarged at angles jaw.	Teeth: Carious. Throat: Lymphoid hyperplasia. Nose: Hypert. inf. turb.	Well.
Mar., 1913. Chronic tonsillitis. Cervical adenitis.	None.	July, 1915. Perfectly well.	Still slightly enlarged in both anterior and posterior triangles.	Teeth: Good. Throat: Looks normal.	Well.
Mar., 1913. Chronic tonsillitis. Mouth-breather.	None.	Nov., 1915. Frequent colds; otherwise good.	Not enlarged; just palpable at angles jaw and posterior triangles.	Teeth: Good. Throat: Looks normal.	Well.
Mar., 1913. Chronic tonsillitis. Cervical adenitis.	None.	June, 1915. Well.	Barely palpable in anterior and posterior triangles.	Teeth: Many carious; alveolar abscess upper right molar. Throat: Looks normal.	Well. Enlarged cervical glands disappeared, although teeth still carious; also alveolar abscess.
April, 1913. Chronic tonsillitis. Cervical adenitis.	None.	June, 1915. Headaches (eyes?); otherwise good.	Not palpable at angles jaw.	Teeth: Good condition. Throat: Lymphoid hyperplasia.	Well.
April, 1913. Chronic tonsillitis. Mouth-breather.	None.	May, 1913. Much improved; no sore throat; joints normal; breathes normally.	Still slightly enlarged at angles jaw and in posterior triangles.	Teeth: Many carious. Throat: No note.	Well.
May, 1913. Cervical adenitis. Mouth-breather.	None.	July, 1915. Much improved; no cough since operation. Still sleeps with mouth open.	One gland angle jaw right ½ cm. diameter; smaller on left.	Teeth: Carious. Throat: Looks normal. Vocal cords: Normal.	Well.
May, 1913. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Perfectly well; healthy looking.	Barely palpable.	Teeth: Carious lower jaws. Throat: Lymphoid hyperplasia.	Well.
May, 1913. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Well.	Angle jaw right barely palpable; not palpable left.	Teeth: Good. Throat: Looks normal.	Well.
May, 1913. Chronic tonsillitis. Cervical adenitis.	None.	June, 1915. Perfectly well except headache.	Not palpable in anterior triangles; just palpable left posterior triangles.	Teeth: Good. Throat: Discharge from nasopharynx. Nose: Antrum infection.	Well.
May, 1913. Chronic tonsillitis.	None.	July, 1915. Treated H. L. H. for epilepsy. No sore throat or cold since operation.	Submaxillary triangles glands enlarged; posterior triangles slightly enlarged.	Teeth: Carious. Throat: Looks normal. Ears: As before.	Epilepsy not improved.
June, 1913. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Well.	Measure 1 x 1 cm. at angles jaw; not palpable posterior triangles.	Teeth: Good. Throat: Looks normal. Nose: Looks normal.	Well. Glands still slightly enlarged.
June, 1913. Cervical adenitis. Mouth-breather.	None.	June, 1915. Perfectly well; grown rapidly.	Small, shotty glands at each angle jaw.	Teeth: Carious; abscess lower molar left. Throat: Looks normal.	Well. Glands decreased in size, although teeth carious and alveolar abscess.
July, 1913. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. No earache; much improved.	Barely palpable.	Teeth: Carious. Throat: Looks normal. Ears: Normal.	Well.
Aug., 1913. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Perfectly well.	Not palpable on either side.	Throat: Looks normal. Ears: Look normal. Teeth: Good.	Well.
Aug., 1913. Chronic tonsillitis. Mouth-breather.	None.	Aug., 1915. Well.	Not palpable.	Throat: Looks normal.	Well.
Sept., 1913. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Well.	Not palpable.	Teeth: Carious. Throat: Looks normal.	Well.
Sept., 1913. Chronic tonsillitis. Cervical adenitis.	Bleeding from nasopharynx controlled with difficulty.	June, 1915. Still mouth-breather; otherwise perfectly well.	Not palpable.	Teeth: Good. Throat: Looks normal. Nose: Deflected septum.	Well.
Sept., 1913. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Perfectly well.	Not palpable.	Teeth: Good. Throat: Looks normal.	Well.
Sept., 1913. Chronic tonsillitis.	None.	June, 1915. Well.	Barely palpable.	Teeth: Carious; alveolar abscess upper right. Throat: Looks normal.	Well.
Sept., 1913. Cervical adenitis.	None.	June, 1915. Well; gained 15 pounds weight.	Not palpable.	Teeth: Carious. Throat: Looks normal.	Well.
Sept., 1913. Cervical adenitis.	None.	July, 1915. Well.	Small shotty glands in all triangles.	Teeth: Many carious. Throat: Looks normal.	Well.
Sept., 1913. Cervical adenitis.	None.	July, 1915. Well.	Not palpable on right; at angle jaw left measures ½ cm. diameter.	Teeth: One carious left. Throat: Lymphoid hyperplasia.	Well.

TABLE VIII.—SUMMARY OF 142 CASES IN WHICH THE TONSILS AND ADENOIDS WERE REMOVED ON ACCOUNT OF ENLARGED
II Cases between 6 and 10 Years of Age.—Continued.

Name. Surg. No. Sex.	Race.	Age.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
A. R. 33051. Female.	W	10	Swelling glands neck; frequent colds; mouth-breather; frequent sore throat.	Enlarged both sides.	Tonsils: Not enlarged. Adenoids: Small; infected. Teeth: Carious.	General glandular enlargement. W. B. C.: 18,700. Hb.: 80%. Temperature: 98.6° F.
C. G. 33170. Female.	W	9	Frequent colds; chronic cough; mouth-breather.	Slightly enlarged at angle jaws.	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 98° F.
R. T. 33214. Male.	W	7	Frequent sore throat; mouth breather.	Enlarged on both sides.	Tonsils: Not enlarged. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 98.6° F.
J. P. 33253. Male.	W	7	Frequent sore throat; mouth breather.	Enlarged on both sides.	Tonsils: Meet in mid-line. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 98.4° F.
H. F. 33310. Female.	W	9	Frequent sore throat.	Evident on inspection both sides.	Tonsils: Meet in mid-line. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 99° F.
R. B. 33349. Female.	W	9	Swelling glands neck; infrequent sore throat; mouth-breather.	Size walnuts at both angles of jaw.	Tonsils: Much enlarged. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 98.6° F.
E. H. 33357. Male.	W	10	Frequent sore throat; anorexia.	Enlarged both sides.	Tonsils: Large. Adenoids: Small. Teeth: Good.	Normal. Temperature: 99° F.
A. W. 33361. Female.	W	9	Sore throat; mouth-breather.	Enlarged both sides.	Tonsils: Small; imbedded. Adenoids: Small; infected. Teeth: Good.	Normal. Temperature: 98.4° F.
N. C. 33550. Male.	W	7	Sent by school inspector.	Size walnuts both sides at angle jaws.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Many carious.	Normal. Temperature: 98° F.
J. S. 33566. Male.	W	7	Swelling glands neck; mouth-breather.	Enlarged both sides.	Tonsils: Very large. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 98.2° F.
L. N. 33599. Male.	W	7	Swelling glands neck; no history sore throat.	Size walnuts angle jaws.	Tonsils: Very large. Teeth: Good. Adenoids: Large mass.	Normal. Temperature: 98.4° F.
G. M. 33621. Female.	W	6	Sore throat; mouth-breather.	Enlarged angle jaws.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Good.	Normal. Temperature: 99° F.
E. M. 33622. Female.	W	8	Sore throat; mouth-breather.	Size walnut angle jaw left; hard.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99.6° F.
J. W. 33689. Male.	W	9	Frequent sore throat for 2 years.	Enlarged both sides.	Tonsils: Meet in mid-line. Adenoids: Large mass. Teeth: No note.	Normal. Temperature: 100° F.
W. R. 33704. Male.	W	9	Frequent sore throat; mouth-breather.	Enlarged both sides.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: No note.	Normal. Hb.: 80%. Temperature: 99° F.
L. A. 33759. Female.	W	7	Earache; mouth-breather. History c. s. meningitis, and pneumonia.	Enlarged both sides.	Tonsils: No note. Adenoids: Large mass. Teeth: No note.	Systolic murmur apex and axilla. Extra systole. Temperature: 98.4° F.
G. B. 33784. Male.	W	9	Mouth-breather for 2 years.	Enlarged both sides.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. W. B. C.: 10,200. Hb.: 73%. Temperature: 98.6° F.
M. H. 33937. Female.	W	6	Sore throat; mouth-breather; earache.	Enlarged both sides.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Carious.	General glandular enlargement. Systolic murmur apex and axilla. Br. rales over both lungs.
K. G. 34308. Male.	W	9	Swelling angle jaw right 4 months; no history sore throat. (Swelling due to dentigerous cyst.)	Enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Dentig. cyst lower right.	Normal. Temperature: 99° F.
B. Z. 34333. Male.	W	8	Spitting blood.	Much enlarged at angles jaw.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Many carious.	Normal. Temperature: 98° F.
M. McK. 34334. Female.	W	10	Frequent sore throat.	Much enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 99.2° F.
E. B. 34335. Female.	W	10	Frequent sore throat; headache; earache.	Enlarged both sides; about 3 x 4 cm. angle jaw left.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Good. Ears: Chronic suppurative otitis media.	Normal. Temperature: 98° F.
E. B. 34336. Female.	C	6	Sore throats; mouth-breather.	Enlarged both sides angle jaw.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Carious.	Normal. Temperature: 98.4° F.
H. M. 34490. Female.	C	10	Sore throat; mouth-breather.	Size almond on right; just palpable left angle jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Ascaris infection. W. B. C.: 8200. Hb.: 85%. Temperature: 98.6° F.
M. M. 34538. Female.	W	7	Swelling glands neck left; frequent sore throat; mouth-breather.	Size walnut left angle jaw; smaller on right. Hard, discrete.	Tonsils: Small; embedded. Adenoids: Large mass. Teeth: Carious.	Normal (lungs O. K.). W. B. C.: 19,000. Hb.: 65%. Temperature: 99° F.
R. S. 34783. Female.	W	10	Frequent sore throat.	Enlarged both sides.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 99° F.
A. H. 34840. Male.	W	8	Sore throat; earache; mouth-breather.	Slightly enlarged both sides.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99° F.
R. A. 34857. Female.	W	6	Cough; mouth-breather; earache right.	Enlarged both sides.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98.8° F.
J. S. 34888. Male.	W	6	Sore throat; mouth-breather.	Enlarged on left 2 x 3 cm.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: No note.	Systolic murmur, not transmitted. Normal otherwise.
M. H. 35003. Female.	C	8	Sore throat frequent.	Slightly enlarged.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98.5° F.
N. S. 35012. Female.	W	6	Earache; sore throat.	Enlarged.	Tonsils: Enlarged, especially left. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99.2° F.

CERVICAL GLANDS, WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

II CASES BETWEEN 6 AND 10 YEARS OF AGE.—Continued.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination.			
		General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
Oct., 1913. Chronic tonsillitis.	None.	July, 1915. Well.	Barely palpable at angles jaw.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Oct., 1913. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Has had several colds; otherwise well.	Not palpable in anterior triangles; size shot in posterior triangles.	Teeth: Good. Throat: Looks normal.	Well.
Nov., 1913. Chronic tonsillitis. Mouth-breather.	None.	Dec., 1915. Perfectly well; breathes normally.	Not palpable.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Nov., 1913. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Still quite nervous; otherwise well.	Barely palpable.	Teeth: Carious. Throat: Looks normal.	Well.
Nov., 1913. Chronic tonsillitis.	None.	Feb., 1916. Perfectly well since operation.	Not palpable either side.	Throat: Lymphoid hyperplasia.	Well.
Nov., 1913. Cervical adenitis.	Bleeding from nasopharynx.	Aug., 1915. Frequent colds, but no swelling glands neck.	Just palpable on right; not on left.	Teeth: Carious. Throat: Some discharge from nasopharynx.	Well. Glands disappeared, although teeth still carious.
Nov., 1913. Chronic tonsillitis.	None.	Oct., 1915. Perfectly well.	Size bean angle jaw right; not palpable left.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Nov., 1913. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Palpable left; not palpable right.	Teeth: Carious; malocclusion. Throat: Looks normal. Nose: Deflected septum left.	Well.
Dec., 1913. Cervical adenitis.	None.	July, 1915. Well since operation.	Glands at angle jaws about ½ cm. diameter; numerous small glands posterior triangles.	Teeth: Carious. Throat: Looks normal.	Well.
Dec., 1913. Cervical adenitis.	None.	July, 1915. Perfectly well.	About ½ cm. diameter at angle jaws.	Teeth: Carious lower left. Throat: Lymphoid hyperplasia.	Well.
Jan., 1914. Cervical adenitis.	None.	June, 1915. Perfectly well.	Not palpable.	Teeth: Good. Throat: Normal.	Well.
Jan., 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well; grown rapidly.	Barely palpable.	Teeth: Carious lower right. Throat: Looks normal.	Well.
Jan., 1914. Cervical adenitis.	None.	June, 1915. Perfectly well.	Just palpable at angle jaw both sides.	Teeth: Good. Throat: Looks normal.	Well.
Jan, 1914. Chronic tonsillitis.	None.	Oct., 1915. Well.	Size pea at angle jaw right; others not palpable.	Teeth: Good. Throat: Lymphoid hyperplasia. Nose: Hypert. inf. turb. double.	Well.
Jan., 1914. Chronic tonsillitis.	None.	June, 1915. Well.	Barely palpable on both sides.	Teeth: Carious upper molar. Throat: Lymphoid hyperplasia. Ear: Discharge on right, acute.	Well.
Jan., 1914. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Still discharge from ear; otherwise well.	On left at angle jaw glands 1 cm. diameter; not palpable right. Small, shotty in posterior triangles.	Teeth: Carious. Throat: Discharge from nasopharynx. Ears: Chronic suppurative otitis media double.	Well. Chronic otitis media persists.
Jan., 1914. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Perfectly well.	Barely palpable.	Teeth: Good; malocclusion. Throat: Lymphoid hyperplasia.	Well.
Feb., 1914. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Perfectly well.	Measure 1 x 1 cm. angles jaw both sides; discrete; movable.	Teeth: Many carious. Throat: Looks normal.	Well, although glands still enlarged.
April, 1914. Chronic tonsillitis. Mouth-breather. (Removal dentigerous cyst.)	None.	July, 1915. Perfectly well.	Not palpable.	Teeth: Carious. Throat: Looks normal.	Well.
April., 1914. Chronic tonsillitis.	None.	Jan., 1916. Perfectly well.	Barely palpable each side.	Teeth: One carious. Throat: Looks normal.	Well.
April, 1914. Chronic tonsillitis.	None.	Sept., 1915. Glands occasionally enlarge; headache.	About 1 cm. diameter angles jaw; slightly smaller posterior triangle.	Teeth: Two carious. Throat: Lymphoid hyperplasia.	Improved. Glands neck still enlarged.
April, 1914. Cervical adenitis.	None.	Oct., 1915. No headaches; frequent colds; otherwise well.	1 x 1 cm. at angles jaw both sides; discrete; movable; hard.	Teeth: Good. Throat: Lymphoid hyperplasia. Ears: No discharge; drums retracted; hearing good left, impaired right.	Well.
April, 1914. Chronic tonsillitis.	None.	July, 1915. Perfectly well.	Not palpable on either side.	Teeth: Good. Throat: Lymphoid hyperplasia. Nose: Obstr. rt. hypert. inf. turb.	Well.
May, 1914. Chronic tonsillitis.	None.	Jan., 1916. Perfectly well.	Angle jaw right gland 1 x 2 cm.; smaller left.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well, although glands still slightly enlarged.
May, 1914. Cervical adenitis.	None.	June, 1915. Nervous; otherwise well.	Enlarged; matted together, typical tbc. glands.	Teeth: Good. Throat: Lymphoid hyperplasia.	Not improved. Tbc. glands neck: microscopic examination tonsils and adenoids shows no Tbc.
June, 1914. Chronic tonsillitis.	None.	July, 1915. Perfectly well.	Not palpable.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
June, 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Barely palpable.	Teeth: Carious. Throat: Lymphoid hyperplasia. Nose: Deflected septum left.	Well.
June, 1914. Chronic tonsillitis.	None.	July, 1915. Perfectly well; grown rapidly.	About ½ cm. diameter.	Teeth: Carious upper. Throat: Looks normal. Ears: Normal.	Well.
July, 1914. Cervical adenitis.	None.	June, 1915. Well.	Not palpable.	Teeth: Carious. Throat: Lymphoid hyperplasia.	Well.
July, 1914. Chronic tonsillitis.	None.	Nov., 1915. Well.	Not palpable.	Teeth: Carious. Throat: Lymphoid hyperplasia.	Well.
July, 1914. Chronic tonsillitis.	None.	June, 1915. Well.	Not palpable.	Teeth: Good. Throat: Discharge from nasopharynx. Nose: Discharge left side.	Well.

TABLE VIII.—SUMMARY OF 142 CASES IN WHICH THE TONSILS AND ADENOIDS WERE REMOVED ON ACCOUNT OF ENLARGED

II. Cases between 6 and 10 Years of Age.—Continued.

Name, Surg. No. Sex.	Race.	Age.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
I. G. 35085. Female.	C	9	Headache; frequent tonsillitis; mouth-breather; nosebleeds.	Size walnut angle jaw left.	Tonsils: Small, adherent to pillars. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 99° F.
C. W. 35227. Male.	C	6	Impaired speech; frequent sore throat; mouth-breather.	Enlarged.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Carious.	Normal. Temperature: 98.6° F.
D. S. 35239. Female.	W	7	Frequent sore throat; mouth-breather; earache; nosebleed q. n.	Much enlarged both sides.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Uncle died this hospital with hemophilia. Normal. Temperature: 98.6° F.
E. H. 35268. Female.	W	9	Frequent tonsillitis and nosebleed.	Size hickory nut left angle jaw.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Carious.	Normal. Temperature: 98.4° F.
A. Q. 35319. Male.	W	6	Enlarged glands since septic pharyngitis (milk) in 1912.	Size walnut on each side angle jaw.	Tonsils: Densely adherent; small. Adenoids: Very large. Teeth: Good.	Normal. Temperature: 99.8° F.
H. S. 35394. Male.	W	8	Sore throat; mouth-breather.	Enlarged.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 98° F.
L. S. 36654. Male.	W	7	Diagnosis Phippa Dispensary: Cervical ad. Tbc. No history sore throat.	Mass glands each angle jaw about 3 x 5 cm.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal (lungs). Temperature: 98.5° F.
A. B. 36640. Female.	C	10	Swelling glands neck. Frequent tonsillitis.	Evident on inspection each angle jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal (lungs). Temperature: 99° F.

III. Cases between 11 and 15 Years of Age.

M. S. 30705. Female.	W	12	Mouth-breather; chronic nasal cold.	Enlarged.	Tonsils: Not enlarged; imbedded. Adenoids: Large mass. Teeth: Carious.	General glandular enlargement. W. B. C.: 10,700. Hb.: 80%. Temperature: 98.4° F.
E. R. 30858. Female.	C	13	Chronic sore throat.	Enlarged both sides.	Tonsils: Much enlarged. Adenoids: Small amount. Teeth:	Normal. Temperature: 98.6° F.
H. M. 31098. Male.	W	14	Frequent sore throat; mouth-breather. Adenoid facies.	Evident on inspection angle jaws.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: No note.	Normal. W. B. C.: 7600. Hb.: 70%. Temperature: 98° F.
C. H. 31157. Female.	W	12	Frequent sore throat; chronic laryngitis; frequent headache, frontal.	Enlarged.	Tonsils: Enlarged. Adenoids: Large mass. Teeth: No note.	Normal. Temperature: 99° F.
V. S. 31231. Female.	W	12	Swelling gland neck; frequent sore throat; loss appetite.	Evident on inspection angle jaws.	Tonsils: Much enlarged; especially left. Adenoids: Much enlarged. Teeth: Good.	Normal. Temperature: 98.6° F.
P. S. 31233. Female.	W	11	Frequent sore throat; general malaise.	Enlarged.	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: Good.	Normal. W. B. C.: 10,500. Hb.: 80%. Temperature: 99° F.
J. C. 31353. Male.	C	12	Swelling glands neck; frequent sore throat.	Evident on inspection angle jaws.	Tonsils: Meet in mid-line. Adenoids: Large mass. Teeth: Good.	Normal. Temperature: 99.2° F.
B. G. 31936. Female.	W	15	Frequent tonsillitis; quinsy; mouth-breather.	Enlarged.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 98.6° F.
W. W. 32050. Male.	W	11	Frequent sore throat; mouth-breather.	Enlarged anterior and posterior triangles.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Temperature: 99° F.
M. B. 32188. Female.	W	13	Frequent tonsillitis for past 3 years.	Evident on inspection angle jaw right; enlarged other triangles.	Tonsils: Very large. Adenoids: Very large. Teeth: Carious.	Normal. W. B. C.: 14,200. Hb.: 98%. Temperature: 99° F.
L. K. 32206. Female.	W	12	Frequent tonsillitis; earache.	Enlarged at angles jaw.	Tonsils: Small; embedded. Adenoids: Small. Teeth: Good.	Normal. Temperature: 99.6° F.
H. H. 32378. Male.	W	11	Frequent tonsillitis; mouth-breather.	Enlarged.	Tonsils: Not enlarged. Adenoids: Enlarged. Teeth: No note.	Trace albumin; no casts; otherwise normal. Temperature: 98.6° F.
E. J. 32539. Male.	W	13	Frequent tonsillitis; mouth-breather.	Enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99.6° F.
B. G. 33430. Male.	W	14	Frequent tonsillitis for past 2 years.	Size walnut angle jaw right.	Tonsils: Enlarged. Adenoids: Small amount. Teeth: Good.	Normal. Temperature: 98° F.
R. L. 33736. Male.	W	15	Swelling gland neck left; mouth-breather; impaired hearing.	Evident on inspection angle jaw left; palpable on right.	Tonsils: Small; embedded. Adenoids: Small; infected. Teeth: Carious. Ears: Chronic catarrhal otitis media.	Normal. W. B. C.: 6600. Hb.: 95%. Temperature: 99.2° F.
J. C. 33773. Male.	W	12	Frequent tonsillitis for past 2 years; mouth-breather.	Enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98.6° F.
M. F. 33983. Female.	W	12	Frequent tonsillitis; earache.	Size hickory nut angle jaw on right.	Tonsils: Small; embedded. Adenoids: Small. Teeth: Good.	Normal. Temperature: 98.6° F.
C. B. 34013. Male.	W	15	Mouth-breather; occasional sore throat.	Enlarged both sides at angle jaw.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 98° F.
E. J. 34493. Female.	C	13	Frequent tonsillitis.	Enlarged both sides at angle jaw.	Tonsils: Meet in mid-line. Adenoids: Enlarged. Teeth: Carious.	Normal. Temperature: 99.2° F.
J. K. 34916. Male.	W	11	Chronic cough; mouth-breather; sore throat frequent.	Evident on inspection at angle jaw right.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Carious.	Normal. Temperature: 98.3° F.
M. S. 35023. Female.	W	12	Frequent sore throat; earache.	Enlarged both sides.	Tonsils: Enlarged. Adenoids: Small; infected. Teeth: Carious. Nose: Hypert. inf. turb. right.	Systolic murmur not transmitted; otherwise normal. Temperature: 99.8° F.

CERVICAL GLANDS, WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

II. CASES BETWEEN 6 AND 10 YEARS OF AGE.—Continued.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination.			
		General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
Aug., 1914. Cervical adenitis.	None.	Aug., 1915. Headaches frequent; otherwise well.	½ cm. diameter at each angle jaw.	Teeth: Good. Throat: Looks normal.	Well.
Sept., 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well; speech normal.	Barely palpable.	Teeth: Alveolar abscess; carious. Throat: Lymphoid hyperplasia.	Well.
Sept., 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Barely palpable.	Teeth: Carious. Throat: Looks normal. Ears: Normal.	Well.
Sept., 1914. Cervical adenitis.	None.	June, 1915. Well; no nosebleed since operation.	Enlarged on left.	Teeth: Carious right and left.	Well, although glandular enlargement left persists.
Sept., 1914. Cervical adenitis.	None.	June, 1915. Well.	Barely palpable each side.	Teeth: Good. Throat: Looks normal.	Well.
Sept., 1914. Chronic tonsillitis.	None.	Sept., 1915. Well.	Not palpable.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Mar., 1915. Cervical adenitis. (Tbc.?).	None.	Nov., 1915. General health good.	1½ x ½ cm. at each angle jaw; movable.	Teeth: Good. Throat: Lymphoid hyperplasia.	Improved.
Mar., 1915. Cervical adenitis.	None.	Nov., 1915. Well; no colds since operation.	Not palpable.	Teeth: Carious. Throat: Lymphoid hyperlasia.	Well.

III. CASES BETWEEN 11 AND 15 YEARS OF AGE.

Oct., 1912. Mouth-breather. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Not palpable.	Teeth: Good. Throat: Looks normal.	Well.
Nov., 1912. Chronic tonsillitis. Cervical adenitis.	None.	Nov., 1915. Perfectly well.	Not palpable.	Teeth: Carious. Throat: Looks normal.	Well. Glandular enlargement disappeared, although teeth still carious.
Dec., 1912. Cervical adenitis. Mouth-breather.	None.	June, 1915. Perfectly well.	Barely palpable both sides.	Teeth: Gingivitis. Throat: Looks normal.	Well.
Dec., 1912. Chronic tonsillitis. Mouth-breather.	None.	June, 1915. Well; no headaches; infrequent colds.	Not palpable anterior triangles; just felt left posterior triangle.	Teeth: Carious lower left. Throat: Looks normal.	Well.
Jan., 1913. Cervical adenitis.	None.	Sept., 1915. Perfectly well.	Not palpable angle jaws; size shot in posterior triangles.	Teeth: Good. Throat: Looks normal.	Well.
Jan., 1913. Chronic tonsillitis.	None.	Aug., 1915. Perfectly well.	Not palpable angles jaw; just felt in posterior triangles left.	Teeth: Good. Throat: Looks normal.	Well.
Jan., 1913. Cervical adenitis.	None.	July, 1915. Perfectly well.	Size shot in anterior triangles; slightly enlarged posterior triangles; especially right.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
April, 1913. Chronic tonsillitis.	None.	June, 1915. Well; gained 34 pounds since operation.	Not palpable in anterior or posterior triangles.	Throat: Looks normal.	Well.
April, 1913. Chronic tonsillitis.	None.	Jan., 1916. Perfectly well.	Just palpable angles jaw; not palpable posterior triangles.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
May, 1913. Cervical adenitis.	None.	Nov., 1915. Perfectly well.	Not palpable.	No note.	Well.
May, 1913. Chronic tonsillitis.	Bleeding due to slipped ligature; vessel caught and ligated.	June, 1915. Perfectly well; gained 39 pounds in weight.	Not palpable.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
June, 1913. Chronic tonsillitis.	None.	July, 1915. Perfectly well.	Slightly enlarged both sides.	Teeth: Carious lower jaws. Throat: Lymphoid hyperplasia.	Well.
July, 1913. Chronic tonsillitis.	None.	Sept., 1915. Still mouth-breather; otherwise well.	Size shot in both anterior and posterior triangles.	Teeth: Carious. Throat: Looks normal.	Well.
Dec., 1913. Chronic tonsillitis.	None.	Oct., 1915. Perfectly well.	Just palpable right; not palpable on left.	Throat: Looks normal.	Well.
Jan., 1914. Cervical adenitis.	None.	June, 1915. Well, aside from impaired hearing on right.	Not palpable either side.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Jan., 1914. Chronic tonsillitis.	None.	Oct., 1915. Perfectly well.	Not palpable either side in anterior or posterior triangles.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well.
Feb., 1914. Chronic tonsillitis. Cervical adenitis.	None.	Sept., 1915. Well. No trouble with ears since operation.	Barely palpable both sides.	Teeth: Good. Throat: Looks normal. Ears: Drums normal.	Well.
Feb., 1914. Chronic tonsillitis. Mouth-breather.	None.	July, 1915. Perfectly well.	Barely palpable both sides.	Teeth: Good. Throat: Looks normal.	Well.
May, 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Not palpable anterior or posterior triangle either side. One palpable gland in submaxillary triangle left.	Teeth: Alveolar abscess left lower. Throat: Looks normal.	Well.
July, 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Just palpable right; not felt on left.	Teeth: Carious upper. Throat: Lymphoid hyperplasia.	Well.
July, 1914. Chronic tonsillitis.	None.	June, 1915. Perfectly well.	Measures 1 x 1 cm. at angles jaw and in posterior triangle.	Teeth: Carious. Throat: Lymphoid hyperplasia. Nose: Hypert. inf. turb. rt.; otherwise normal.	Improved, still some enlargement of cervical glands.

TABLE VIII.—SUMMARY OF 142 CASES IN WHICH THE TONSILS AND ADENOIDS WERE REMOVED ON ACCOUNT OF ENLARGED

III. Cases between 11 and 15 Years of Age.—Continued.

Name, Surg. No. Sex.	Race.	Age.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
E. B. 35083. Female.	W	14	Frequent tonsillitis for past 8 years.	Evident on inspection at angle jaw right.	Tonsils: Small; imbedded. Adenoids: Small; infected. Teeth: Good.	Normal. Temperature: 98.6° F.
D. R. 35124. Female.	W	12	Chronic "cold" for 7 years; mentally deficient.	Evident on inspection at angles jaw both sides.	Tonsils: Small; imbedded. Adenoids: Small; infected. Teeth: Carious. Nose: Deflected septum left.	Tr. albumin and few casts; otherwise normal. Temperature: 98.8° F.
G. B. 35187. Female.	W	12	Mouth-breather.	Enlarged both sides.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: No note.	Normal. Temperature: 98.6° F.
B. R. 35426. Female.	C	11	Frequent sore throat; mouth-breather.	Evident on inspection at angles jaw both sides.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Carious.	Normal. Temperature: 99° F.
D. G. 35440. Female.	W	11	Frequent tonsillitis; earache. Had 3 or 4 tonsil operations.	Evident on inspection at angle jaw left.	Tonsils: Several operations for removal. Adenoids: Small; infected. Teeth: Carious. Ears: Acute otitis media.	Acute double otitis media; otherwise normal. Temperature: 100° F.

IV. Cases over 15 Years of Age.

Name, Surg. No. Sex.	Race.	Age.	Occupation.	Complaint.	Cervical Glands.	Special Examination.	General Physical Examination.
H. G. 29292. Male.	W	24	Student.	Frequent tonsillitis; swelling glands neck; discharge in throat.	Enlarged; hard at angles jaw.	Tonsils: Enlarged; adherent to pillars. Adenoids: Small; infected. Teeth: Good.	Normal. Temperature: 98.7° F.
W. H. 30780. Male.	W	16	Factory.	Frequent tonsillitis for past 2 years; discharge in throat.	Evident on inspection at angles jaw both sides; tendency to mat together (Tbc.?).	Tonsils: Meet in mid-line. Adenoids: Very large. Teeth: No note.	Lungs: Clear on perc. and ausc. Persistent thymus. W. B. C.: 7000. Hb.: 80%. Temperature: 98.4° F.
E. B. 31203. Male.	C	16	School.	Frequent tonsillitis; headache.	Enlarged both sides.	Tonsils: Enlarged. Adenoids: Small. Teeth: No note.	Normal. Temperature: 98° F.
A. L. 31624. Female.	C	24	Cook.	Swelling glands neck; frequent sore throat; earache. Glands neck enlarged for 1 year.	Large mass glands at angle jaw left; matted together; hard. Measure 4 x 5 cm.	Tonsils: Much enlarged. Adenoids: Much enlarged. Teeth: Carious.	Lungs: Clear on posterior and anterior. Wassermann: Negative. Temperature: 98.4° F.
M. McG. 30433. Female.	W	17	Clerk.	Tbc. glands neck. Diagnosis made in Phipps Dispensary.	Much enlarged in anterior and posterior triangles both sides. (Pediculi in head.)	Tonsils: Small; imbedded. Adenoids: Large mass. Teeth: Carious.	No active Tbc. lesion in lungs; otherwise normal. Temperature: 99° F. Pirquet: Positive.
F. H. 31675. Female.	C	17	Maid.	Chronic sore throat; frequent attacks acute tonsillitis.	Enlarged both sides at angles jaw; hard; movable.	Tonsils: Small; adherent to pillars. Adenoids: Small. Teeth: Good.	Normal. Wassermann: Negative. Temperature: 99° F.
A. J. 32723. Female.	W	18	Clerk.	Frequent sore throat; chronic catarrhal otitis media.	Enlarged both sides at angle jaw.	Tonsils: Much enlarged. Adenoids: Small. Teeth: Good.	Normal. Temperature: 98.6° F.
L. K. 33089. Female.	W	18	Factory.	Frequent tonsillitis. Has had two operations for removal tonsils.	Enlarged both sides at angles jaw.	Tonsils: Enlarged; adherent. Adenoids: Small; infected. Teeth: Carious.	Normal. W. B. C.: 8400. Hb.: 85%. Temperature: 99.2° F.
M. G. 34171. Female.	C	19	Maid.	Frequent tonsillitis; swelling glands neck.	Enlarged at angles jaw on both sides.	Tonsils: Imbedded; adherent. Adenoids: Large mass. Teeth: Carious.	Normal. Temperature: 99.8° F.
A. S. 34782. Female.	W	18		Frequent tonsillitis.	Enlarged at angles jaw.	Tonsils: Enlarged. Adenoids: Large mass. Teeth: Carious.	Normal.
M. P. 34976. Female.	W	20	Clerk.	Swelling glands neck left and frequent tonsillitis.	Size walnut angle jaw on left.	Tonsils: Small; embedded. Adenoids: Small. Teeth: No note.	Normal.
H. N. 35082. Female.	W	21		Frequent tonsillitis.	Enlarged both sides.	Tonsils: Small; embedded. Adenoids: Small; infected. Teeth: No note.	Normal.
M. A. 35574. Male.	W	16	Clerk.	Frequent tonsillitis.	Slightly enlarged at angles jaw.	Tonsils: Enlarged; especially right. Adenoids: Large mass. Teeth: No note.	Systolic blow apex not transmitted. R. B. C.: 4,000,000. W. B. C.: 15,500. Hb.: 70%. Temperature: 98.6° F.
T. W. 35937. Female.	W	25	Student.	Frequent tonsillitis; earache.	Size hickory nut angle jaw on left.	Tonsils: Partially removed. Adenoids: Small; infected. Ears: Drums intact.	Normal. Temperature: 98.4° F.
J. S. 37930. Male.	W	21	Orderly.	Frequent tonsillitis.	Enlarged at angles jaw.	Tonsils: Small; adherent. Adenoids: Small. Teeth: Good.	Slight impairment percussion note above right clavicle; otherwise normal. Temperature: 98° F.
J. Y. 37995. Female.	W	18		Frequent sore throat and enlarged glands neck since diphtheria.	Size walnut angles jaw both sides; hard; discrete; movable.	Tonsils: Enlarged. Adenoids: Enlarged. Teeth: Good.	Normal. Has lost 22 pounds in weight. Temperature: 99° F.

CERVICAL GLANDS, WITH SUBSEQUENT REPORT ON THEIR CONDITION AFTER DISCHARGE FROM HOSPITAL.—Continued.

III. CASES BETWEEN 11 AND 15 YEARS OF AGE.—Continued.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination. General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
Aug., 1914. Chronic tonsillitis.	None.	Dec., 1915. Perfectly well; two "colds" since operation.	Slightly enlarged angle jaw right; and in posterior triangle right.	Teeth: Good. Throat: Looks normal.	Well. Glands still slightly enlarged on right side neck.
Aug., 1914. Cervical adenitis.	None.	July, 1915. No nasal discharge since operation.	Slightly enlarged in submaxillary, anterior and posterior triangles.	Teeth: Good. Throat: Looks normal.	Improved. Still some enlargement of cervical glands.
Aug., 1914. Cervical adenitis.	None.	Dec., 1915. Perfectly well.	Just palpable.	Throat: Looks normal.	Well.
Oct., 1914. Cervical adenitis.	None.	July, 1915. Well, aside from headaches. (Referred ophthalmology.)	About ½ cm. in diameter at angles jaw and posterior triangle.	Teeth: Good. Throat: Looks normal.	Well.
Oct., 1914. Cervical adenitis. (Paracentesis.)	None.	Feb., 1916. Perfectly well.	Barely palpable.	Teeth: Good. Throat: Looks normal. Ears: Normal.	Well.

IV. CASES OVER 15 YEARS OF AGE.

Date and Indication for Operation (Tonsillectomy).	Post-operative Complications.	Subsequent Examination. General Health.	Cervical Glands.	Condition of Nose, Throat and Teeth.	Result.
Feb., 1912. Chronic tonsillitis.	None.	July, 1915. Perfectly well; "colds" less frequent since operation.	Not palpable.	No note.	Well.
Oct., 1912. Cervical adenitis.	None.	July, 1915. Perfectly well since operation.	Not palpable.	Teeth: Good. Throat: Looks normal.	Well. (Tbc. skin test.)
Dec., 1912. Chronic tonsillitis.	None.	Sept., 1915. Perfectly well.	Not palpable.	Teeth: Carious lower molar. Throat: Looks normal.	Well.
Mar., 1913. Cervical adenitis. (Extraction carious teeth.)	None.	July, 1915. Perfectly well since operation.	Barely palpable.	Teeth: Good. Throat: Looks normal.	Well. (The mic. sections of tonsils and adenoids were lost; may have been tbc.)
Feb., 1915. Cervical adenitis.	None.	Oct., 1915. Improved.	Angle jaw right 1 x 2 cm. Submaxillary triangle left 2 x 4 cm. hard; movable.	Teeth: Alveolar abscess lower left. Throat: Lymphoid hyperplasia. Sinuses: Infection right antrum.	Improved. (This case included in the group of tbc. adenitis without mic. Tbc. in tonsils or adenoids.) (Infect. right antrum.)
Mar., 1913. Chronic tonsillitis. Cervical adenitis.	None.	June, 1915. Well since operation.	Not palpable.	Teeth: Good. Throat: Looks normal.	Well.
Sept., 1913. Chronic tonsillitis.	None.	Nov., 1915. Perfectly well.	Not palpable.	Teeth: Good. Throat: Looks normal. Ears: Calcium deposit in drums; hearing good.	Well.
Oct., 1913. Chronic tonsillitis.	None.	Sept., 1915. Perfectly well.	Not palpable.	Teeth: Good. Throat: Looks normal.	Well. (Has had two previous operations for removal tonsils.)
Mar., 1914. Chronic tonsillitis.	None.	Oct., 1915. Perfectly well.	Barely palpable.	Teeth: Good. Throat: Lymphoid hyperplasia.	Well. (Has had four previous operations for removal tonsils.)
June, 1914. Chronic tonsillitis.	None.	July, 1915. Much improved.	A gland 1 cm. diameter at angle jaw on right; not palpable on left.	Teeth: Carious upper left.	Well.
July, 1914. Cervical adenitis.	None.	June, 1915. Perfectly well.	Not palpable.	Throat: Lymphoid hyperplasia.	Well.
Aug., 1914. Chronic tonsillitis.	None.	Oct., 1915. Has lost weight since operation; otherwise good.	Not palpable.	Throat: Lymphoid hyperplasia.	
Oct., 1914. Chronic tonsillitis.	None.	July, 1915. Perfectly well.	Measure about ½ cm. diameter at angle jaws.	Teeth: Carious. Throat: Looks normal.	Well.
Dec., 1914. Cervical adenitis.	None.	July, 1915. Has had several pharyngitis attacks; otherwise good.	Glands slightly larger than at time of operation.	No note.	Not improved.
Sept., 1915. Chronic tonsillitis.	None.	Feb., 1916. Perfectly well.	Not palpable.	Teeth: Good. Throat: Normal.	Well.
Sept., 1915. Cervical adenitis.	None.	Mar., 1916. Has gained 20 pounds since operation; still nervous; eyes prominent; Graefe positive.	Not palpable.	Throat: Lymphoid hyperplasia.	Well.

A LEGEND OF SALERNO.

HOW CONSTANTINE THE AFRICAN BROUGHT THE ART OF MEDICINE TO THE CHRISTIANS.

By CHARLES SINGER, Oxford, England.

I. INTRODUCTION.

Away back in the mists which enshroud the dawn of European medicine stands the shadowy figure of Constantine the African. The only certain facts concerning his history are that he died about 1087, and that in the latter part of the eleventh century works emanating from the school of Salerno were already borrowing from writings to which his name is attached. These writings of Constantine were no original productions. They were, for the most part, mere translations, very badly rendered, from the Arabic of the Egyptian Israelite, Abu Jakub Ishak ben Soleiman el Israeli, known to mediæval medicine as Isaac Judaeus (died A. D. 932 or 941). The works of Isaac, though greatly regarded in mediæval times, are themselves in the main little more than versions of various works of Galen. Both Isaac and Constantine derive their main importance in the history of European medicine from the fact that they were the earliest vehicles for the conveyance of the Arabian medical systems to the West.

Practically the only account that we have of the life of Constantine is contaminated from its very source. It is from the hand of Peter the Deacon (1107-1140), librarian of that Monastery of Monte Cassino where most of Constantine's work of translation is said to have been performed. Peter the Deacon is, however, a writer who shows himself credulous and gullible to the last degree. No story is too absurd for him to record, no anachronism too glaring to deter his pen. Furthermore, his main interest in writing is the exaltation of the monastery to which he was attached. Modern research has convicted him of the forgery of documents and the falsification of records. Yet it is on Peter, and Peter only, that we have to rely for the following account of the life of Constantine, which bears on the face of it a legendary character:[1]

Constantine the African was a monk of this house (Monte Cassino) and was deeply learned in philosophical studies, both Oriental and Occidental, and was a very Hippocrates for brilliance. Leaving Carthage, where he was born, he went to Babylon, where he fully acquired grammar, dialectic, physic, geometry, arithmetic, mathematics, astronomy, necromancy and music, and he thoroughly learned, moreover, the physic of the Chaldæans, Arabs, Persians and Saracens.

From Babylon he went to India and there he applied himself to the studies of that country. Having completely mastered the arts of the Indians he proceeded to Ethiopia and acquired the discipline of the Ethiopians also. And when he was thus sated with knowledge he went to Egypt and became instructed in all the wisdom of the Egyptians.

After he had spent nine and thirty years in study, he came again to Carthage [Africa]. But when the people there saw that he was thus filled with the cunning of all the Gentiles, they sought to kill him. Wherefore Constantine secretly took ship and escaped to Salerno and there lay hid for a while disguised as a beggar, till he was recognized by the brother of the king of the Babylonians, who happened to visit there, and so he was haled in great honor to the house of Duke Robert.

Leaving Salerno, Constantine went to the Monastery of Monte Cassino, and here he was received in all good will by the Abbot Desiderius, and he became a monk. In that very monastery he translated from divers foreign tongues a perfect multitude of works, among which the most important are the following:

The Pantegni, which is divided into twelve books, wherein is set forth what it is meet a physician should know.

The Practica, wherein is laid down how a physician should preserve health and cure disease. It is divided into twelve books.

The Book of twelve Steps (Liber duodecim graduum).

On Food and Diets.

The Book of Fevers, which he rendered from the Arabic.

On the Internal Members.

On Coitus.

The Viaticum, which he divided into seven parts. The first on diseases of the face. Concerning instruments. On diseases of the stomach and intestines. On diseases of the liver, kidneys, bladder, spleen and gall-bladder. On conditions arising in the organs of generation. On all conditions arising in the outer skin [being a work] expounding in sentences the Book of Aphorisms, the Tegni, the Megatechni, the Microtechni, the Antidotarium and the disputations of Plato and Hippocrates.

On Medication with Simples.

The Gynæcia, that is, on the female organs and parts.

On the Pulse.

The Prognostics.

On Experience [De Experimentis].

Glossaries of Herbs and Spices(?) [Specierum].

The Surgery.

The Book of Treatment of the Eyes.

This man spent forty years in acquiring the learning of the nations and he died full of years at Monte Cassino. He was contemporary with the emperors Michael, Constantine, Alexius, and Henricus IV.

Atto, the pupil of Constantine the African and chaplain to the Empress Agnes, copied into elegant Latin style the works which the said Constantine had translated. Atto, Haito or Hetto, for the name is thus variously written, flourished *anno* 1170.[1]

This legendary account of Constantine presents numerous difficulties and improbabilities and need hardly be discussed seriously. Even the list of his works, which presumably were

[1] For the falsifications of the Monte Cassino MSS. by Peter the Deacon see Erich Caspar "*Petrus Diaconus und die Monte Cassineser Fälschungen. Ein Beitrag zur Geschichte des italienischen Geisteslebens im Mittelalter.*" Berlin, 1909; and E. A. Loew, "*The Beneventan Script*," Oxford, 1914.

[1] The account here translated occurs in two works of Peter the Deacon:

(a) *De viris illustribus cassinensibus*, Ch. XXIII and XXIV, reprinted in Johan Albert Fabricius, Bibliotheca Ecclesiastica, Hamburg, 1718, pp. 180 and 182.

(b) *Chronica monasterii Cassinensis*, Lib. III, Ch. 35, of Leo Mariscanus, bishop of Ostia, continued from the middle of Book III by Peter the Deacon and reprinted in Migne's Patrologia Latina, Vol. 173, p. 767, where some minor textual variations are recorded.

before the librarian at Monte Cassino, can hardly be made to fit in with those writings of Constantine that have come down to us. It is, however, possible that an investigation of the surviving manuscripts of Constantine's work might clear up some of the discrepancies. The number, the wide distribution, and the extensive variations in these manuscripts, as well as the frequency with which his writings are quoted, all testify to the great weight attached to his works in mediæval times.

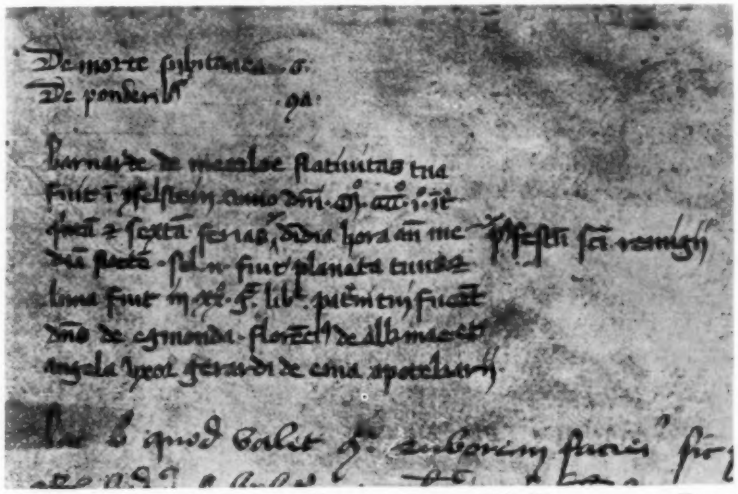
Only one event remains to be added to the account of him given by Peter. There is a tradition that Constantine, before entering the monastery of Monte Cassino, acted as secretary to the Norman Duke, Robert Guiscard, at Salerno, to whom he was especially useful on account of his knowledge of Oriental languages.

The legend which we give below of the coming of Constantine to Salerno is no less improbable than that of Peter. It is perhaps a variant from the same original. The MS. from which it is taken was probably written about two hundred years after the death of Peter, in the days when the school of Salerno had declined and its place had been taken by Montpellier. We give the story as a legend and for what it is worth; it at least has a humorous aspect and yields us a glimpse of the way Constantine was regarded even by an unusually rational and scientific mediæval writer.

II. The Manuscript.

The MS. containing our legend is in the British Museum and is numbered Sloane 2426. It is of octavo size and consists of 122 folios written closely and all in the same regular but very contracted hand. The volume bears the title "Copho Theoria Medicinae. Anatom. Methodus Medendi." The work is, however, clearly not from the hand of Copho, who was a physician at Salerno in the eleventh century, but is of later date, though it relies largely on Salernitan sources. An interesting feature is the rational and scientific spirit in which it is written. The first 62 folios are devoted to the subject of anatomy and form an independent treatise on that subject which it is hoped to publish. Our legend is related in the ordinary course of an anatomical description, and we present it to the reader in this setting.

It is possible to date our manuscript and to fix its provenance within narrow limits. At the very end of the book, after the explicit, and on the verso of the last folio, is an inscription in a somewhat similar, but later, hand to the rest of the book. This inscription we reproduce in facsimile and transcribe as follows:



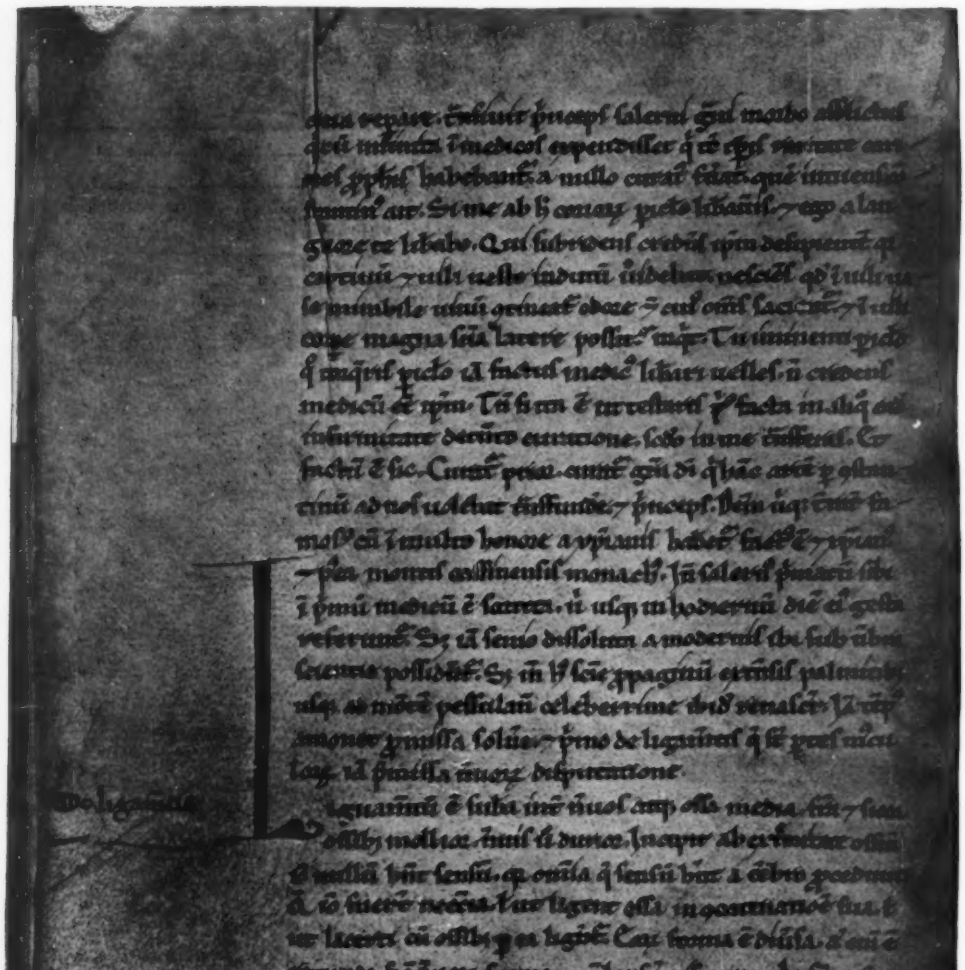
Subscription to MS. British Museum, Sloane 2426, Written in an Early Fifteenth Century Hand.

Barnarde de meerloe nativitas tua
fuit i(n) yselstein. anno d(omi)ni. M°CCCC°I°. i(n)t(er)
p(ost) festu(m) s(an)c(t)i remigii
q(u)inta(m) & sexta(m) ferias ∧ di(mi)dia hora an(te) media(m) noctem. sol. (e)n(im). fuit planeta tuus. &
luna fuit in. XX°. g(radu) lib(rae). pat(ro)ni tui fuer(un)t
d(omi)n(u)s de egmonda. florentius de alkmae et
angela uxor gerardi de ema apotecharii.

Bernard de Meerloe, thy birth was in Ysselstein in the year of Our Lord 1401 between the Friday and the Saturday after the feast of Saint Remigius, half an hour before midnight. The sun was thy planet, and the moon was in the twentieth grade of [the zodiacal sign] Libra. Thy godparents were Master de Egmond, the notable of Alkmaar and Angela, wife of Gerard the Apothecary of Emmer.

The entry is a nativity and is of the sort made for the subsequent casting of a horoscope. It is not unusual to encounter entries of this kind in mediæval medical manuscripts. This nativity gives us at once the year 1401 as the terminus *ad quem* of the MS.

But the MS. was written at a considerably earlier date. At the beginning of the fifteenth century anatomy was deeply under the influence of the northern Italian schools, and



MS. British Museum, Sloane 2426, Folio 8 Verso, in an Early Fourteenth Century Hand.

the work of Mondino (died 1327) or that of his pupil's pupil, Guy de Chauliac (died 1368), were the usual text-books. The author of our MS., however, though he devotes a large amount of attention to anatomy, not only refers to neither of these authors but shows no trace of their influence. This is the more noteworthy as Guy de Chauliac was early translated into Flemish. Our author, on the other hand, is familiar with the schools of Salerno and of Montpellier where Guy was professor, and he tells us that the former is in decay and has been replaced by the French University. After Hippocrates and Galen he refers most frequently to Theophilus. He is under definite Arabian influence, though he mentions only Avenzoar and Ali. He is familiar with, but very opposed to, certain Jewish physicians whom he does not name. These considerations, as well as palæographical appearances, prompt us to place the manuscript as dating from about the first third of the fourteenth century. The extreme limits are probably fairly represented by the dates 1310 and 1340. Palæographical grounds render it unlikely that it was written much before the former date and the contents of the MS. deter us from extending the latter date.

As regards the provenance. The places mentioned in the subscription are all of them within a small area in or near the province of North Brabant. Meerloe is in Brabant on the Maas, some thirty miles from Crefeld. The Yssel or Ijssel is a river which anastomoses with the northern mouth of the Rhine, and Ijsselstein is a very small town on the Ijssel near Utrecht. Ijsselstein is still a well-known surname in Holland. Alkmaar is a more important town in North Holland, about twenty miles north of Haarlem. Emmen or Emmer is a name given to several towns, small villages and hamlets in the province of North Brabant and in the neighboring provinces of Gelderland and Overyssel. It thus seems probable that our MS. was written, somewhere in the region of North Brabant, in the first third of the fourteenth century, while the subscription shows that it was certainly in use there in 1401.

III. The Text.

Sloane 2426.

[folio 7 verso line 31] de partibus musculos seu lacertos componentibus disputabimus. qui sunt ligamenta. caro. nerui. atque panniculi. quibus musculi uestiuntur. etiam de aliis partibus corpus componentibus. ut sunt uene. & arterie. ossa. & de quibusdam superfluitatibus corpus honestantibus & iuuantibus. ut sunt ungues & pili. ut ratio anatomie tocius [folio 8 recto] corporis sit euidentior. tractare non pretermittemus secundum auctoritatem Galeni & albansoardi cordubensis qui pantegni conposuit. quamvis constantinus ipsum conposuisse initiatur. tamen ipsum constantinus. & stephanus nepos patriarche antiochensis transtulerunt. Unde constat ipsos non fuisse auctores. & [5] inventores. sed tamen interpretes & expositores. ut theophilus fuit expositor libri urinarum quod ipse indicat tituli impositione. Uerumtamen cum ipse albonsoardus inter omnes medicos cordubenses summus. qui erant numero mille. CCCC^{ta}. haberetur. plures discipulos habuisset. inter quos sapientiores erant constantinus. & ali. filius tabernarii. qui iussu & [10] auxilio sui magistri. uiaticum. dietas utrasque. librum stomachi. cirurgie. librum graduum. & quamplures alios conposuerunt. accidit. ut rex cordubensis qui lingua illa almansor dicitur. longe a ciuitate infirmaretur. qui cum adalbasoardum legatos ut cito ueniret misisset. tanquam dedignans uenire quia sapientia & nobilitate polle[15]bat. finxit se infirmari. & misit constantinum & ali. qui cum circa regem euigilantur & multo studio plura ex ratione fecissent. purgato corpore ut quartana omnino expellerent. ipsi in balneo posito opium in nimia quantitate constantinus obtulit. & bene fecit. quia opium dedit sed male. quia quantitatem facila [? for facile] uirium conparationem non considerauit. tandem [20] cum ad ipsum venisset. prorsus humore congelato ne deinceps ad locum putrefactionis flueret. & spiritu frigitate opii extincto. omnino curatum inuenit. nil mali sentiens. que uidens timens usque in ultimum diem sibi sociari & in sepulcro poni. iniunxit circunstantibus ne streperent. & quiete essent. quia [25] rex dormiebat. & liberaretur in breue. Quod minime suo indicans socio qui circa spatiandi uillam exierat. amotis sarcinis & omnibus libris nemine sibi socio iuncto portum uenit. ubi casu nauem remis & uelo paratam prospero succedente uento littora relinquente inuenit. & cum itinere unius diei naute maria sulcassent. [30] ut credo nutu domini & eius prouidentia qui hanc artem in χρistianos transferre uolebat ad medelam ipsorum a salernitanis nautis causa prede maria solito transfretantibus sunt captiuati. & salerni deducti. & ut mos est captivorum uenales per uillam ducti. de quorum numero constantinus existens. a quodam coriario emptus est. qui constantinum suo negotio destinauit. quem cum contigisset iuxta littus maris [folio 8 verso] coria reparare. transiuit princeps salerni graui morbo afflictus qui cum infinita in medicos expendisset qui tunc temporis raritate cariores prophetis habebantur. a nullo curatus fuerat. quem intuens constantinus ait. Si me ab hoc coriorum periculo liberaueris. & ego a lan[5]guore te liberabo. Qui subridens credens ipsum desipientem quia captiuum & uili ueste indutum uidebat. nesciens quod in uili uase mirabile uinum contineatur odore etiam cuius omnes sacientur. & in uili corpore magna scientia latere possit. inquit. Cum iminenti periculo quo torqueris periculo iam factus medicus liberari uelles. non credens [10] medicum esse ipsum. Cum si ita est ut testaris prius facta in aliquo eadem infirmitate detento curatione. secundo in me transferas. Et factum est sic. Curatur prior. curator gratia domini qui hanc artem per constantinum ad nos uolebat transfundere. & princeps. Deinde ubique cernitur famosus cum in multo honore a χρistianis haberetur factus est & χρistianus. [15] & pos[t]ea montis cassinensis monachus. Inde salernus primatum sibi in primum medicum est sortita. ubi usque in hodiernum diem eius gesta referuntur. Sed iam senio dissoluta a modernis ibi sub umbra scientie possiduntur. Sed inde huius scientie propaginum extensis palmitibus usque ad montem pessulanum celeberrime ibidem renascitur. Iam tempus [20] amonet promissa soluere. & primo de ligamentis qui sunt partes musculorum iam permissa neruorum disputatione.

IV. Translation.

We will now discuss the parts that enter into the composition of the muscles or brawns, namely, the ligaments, the flesh, the nerves, the fasciæ which cover the muscles, and also other component parts of the body, such as the veins, the arteries and the bones, and certain accessory adornments and accessories of the body, such as the nails and hairs.

In order that our general anatomical account may be the clearer, we will treat of it according to Galen and Avenzoar the Cordovan who composed the Pantegni. The beginning of this book was the work of Constantine and he, together with Stephanus, the nephew of the patriarch of Antioch, translated it. On which account it is well known that they were not authors or discoverers, but mere interpreters and expositors, like Theophilus, who was but an expositor of the Liber Urinarum, as he himself indicates by the borrowed title.

However that may be, this Avenzoar was regarded as the greatest of all the physicians of Cordova who were no less than fourteen hundred in number, and he had many disciples. Among these the wisest were Constantine and Ali, son of the tavern-keeper, who, with the help of their master, composed the Viaticum, the two works on Diet, the Book of the Stomach, the Surgery and the Book of Steps and a number of other works.

Now it happened that the king of Cordova, who in their tongue was called Almansor, was taken ill when far from home, and he sent messengers to Avenzoar that he should come quickly [to his aid]. He, however, being a powerful man by reason of his wisdom and his noble birth, scorned to go but pretended to be sick and sent Constantine and Ali instead.

And they watched by the king's bedside and wrought mightily according to their art and his body was purged so that the quartan fever was wholly expelled therefrom. Then when he was in his bath Constantine exhibited a large quantity of opium. Now he did well in that he gave opium, but he did ill in that he did not estimate exactly its amount and strength. At last, however, [the king] came to himself [again]—the humor being completely solidified and its essence destroyed by the frigidity of the opium—and he felt no ill effects.

Seeing this and fearing that he would be tethered to him for his whole lifetime and until his death, [Constantine] conjured the attendants to make no noise but be still, for the king slept and would shortly awake healed. And without notifying his companion [Ali] who had gone for a walk round the town, and with neither baggage nor books nor friend, he made his way to the harbor, where, by great good luck, he found a land breeze blowing and a ship with oars in readiness and sails set.

Now, when they had cleft the waves for the distance of a day's journey, they were held prisoners by the Salernitan sailors, for the sake of gain, as is the custom with these cross channel seamen. And this was done, as I believe, by the will of God and through the providence of Him who wished to bring this art to the Christians to heal them. And when they had reached Salerno, they were led for sale through the town after the manner of captives. And Constantine, who was of their number, was purchased by a dresser of hides who wanted him for his trade.

It happened that one day he was dressing skins by the seashore when the prince of Salerno passed by. Now the prince was stricken with a grievous sickness and had spent vast sums on physicians, who in that age by reason of their rareness were cherished above prophets, but by none of them had he been healed. And Constantine, when he saw him, spake thus: "If thou wilt free me from the misery of this skin-dressing trade, I will free thee from thy sickness." But the prince smiled, thinking him a madman, for he saw that he was a captive and poorly clad and he knew not that wine of the most satisfying quality and delicious bouquet may be contained in the poorest of flasks and that vast wisdom may rest in a mean frame. Not believing him to be a physician [the prince] therefore said: "Thou that claimest to be a physician and wishest to be delivered from this squalor in which thou liest, if it is as thou sayest, first thy cure shall be wrought on some sick prisoner and afterwards on me."

And it was so; first [the prisoner] and then the prince was cured, and cured, mind you, by God's own grace, who willed to bring us this art through the agency of Constantine. Wherefore is he [Constantine] everywhere well regarded and held in great honor by the Christians. And afterwards he himself became a Christian and a monk at Monte Cassino. Wherefore at Salerno he is regarded as the very first of physicians and there, unto this day, they speak of his works, though now, decayed with age, they are considered by the moderns as in the twilight of science. But that science has been reborn, and a young shoot has gone out from the old vine in the famous city of Montpellier.

But time warns me to redeem my promise and now I must speak of the ligaments which are part of the muscles.

V. Commentary.

The story as here detailed contains so many improbabilities and anachronisms that it would be hopeless to attempt to find any new fact therein. We treat it as a legend, appending certain notes on the events and persons mentioned.

Avenzoar. The family of Avenzoar, Ibn Zohr or Ben Sohr, produced a large number of distinguished members and included several physicians whose lives and works are confused by mediæval writers. One of the Avenzoars, 'Abd Al Malik ibn Zohr ibn 'Abd Al Malik (Abú Merwan), was born near Seville about the beginning of the twelfth century. He passed into the service of the mulatto Abd al Munim and as the latter rose to sovereign power Avenzoar also became very wealthy and distinguished. This Avenzoar died at Seville in 1162. His work "alteisir—[facilitatio seu adjumentum scilicet regiminis et medilae]" was eight times printed in Latin between 1490 and 1574, always with the Colliget of Averroes. The Latin version is itself from a Hebrew translation, which has perhaps given rise to the widespread, but erroneous, impression that Avenzoar was himself a Jew. Another work of

Avenzoar on "The cure of stone" was printed in Venice in 1497.

The Pantegni (παντέχνη) was the work not of Avenzoar but of Galen. A rendering of it is attributed to Constantine.

Stephanus, the nephew of the Patriarch of Antioch. Under this name our author is confusing two writers. *Stephanus of Athens* (seventh century) who was a pupil of Theophilus (Philaret) lived in Byzantium, and afterwards in Alexandria. He produced a work on fevers, and the work on urine attributed to Theophilus was probably his. On the other hand, *Stephanus of Antioch* translated, in 1127, the works of Haly Abbas. The folio edition of Haly Abbas, printed at Venice in 1492, opens thus (folio 6 recto) "Incipit prologus Stephani philosophi discipuli in libro medicinae qui dicitur regalis disponitio quem ex arabico in latinam transtulit facultatem."

Ali, son of the tavern-keeper, is also clearly the result of the confusion of two Arabian writers of that name, Ali ben Redhvan and Ali ben Abbas. Ali ben Redhvan, the Haly Rodoam of mediæval writers, was the son of a water-carrier. He was born at Kahira, became physician to the Khalif El Halim, and he died probably in A. D. 1061. A Latin translation of a work of his was published at Venice in 1496, as "Commentarius in *artem parvam* Galeni" (ars parva = microtegni = ars medica of Galen). Ali ben Abbas, on the other hand, the Haly Abbas of mediæval writers, was a Persian physician who died A. D. 994. He wrote a work entitled Almaleki (= Liber regius) which had great influence on mediæval writers. This was probably epitomized by Isaac Judaeus and from his compilation translated by Constantine. It is included in the Basel edition of Constantine's works (Henricus Petrus, Basel, 1536 and 1539).

Almansor is a further confusion. The liber medicinalis Almansoris (ketaab altebb Almansura) was the work of the Persian Rhazes (died A. D. 923-4). It had its name from the dedication to the ruler of Chorasan. The ninth book of the Almansur (nonum Almansoris) was especially popular in the middle ages. It was widely used as a text-book of pathology and therapeutics, was very frequently translated and commented upon, and a large number of early printed versions are known.

NOTES AND NEWS.

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Dr. Roy D. McClure is Surgeon-in-Chief to the Henry Ford Hospital, Detroit, Mich.

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Dr. Robert T. Miller, Jr., is Professor of Surgery, the University of Pittsburgh, Pittsburgh, Pa.

Dr. George R. Minot has the James Jackson Cabot Research Fellowship of the Harvard Medical School.

Dr. W. H. Morriss is Instructor in Gynecology and Obstetrics, Yale Medical School, and Resident Gynecologist and Obstetrician, New Haven Hospital.

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Dr. John K. Ormond is a member of the Surgical Staff, the Henry Ford Hospital, Detroit, Mich.

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Dr. W. G. Sexton is Visiting Surgeon to St. Joseph's Hospital, Marshfield, Wis.

Dr. W. F. Shallenberger has been appointed Visiting Gynecologist to the Georgia Baptist Hospital and Consulting Gynecologist to the Florence Crittenton Home, Atlanta, Ga.

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